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MONETARY REFORM IN RUSSIA.

THE present efforts to place the monetary system of Russia upon a basis firmer than that which has hitherto existed ought to arouse an interest much greater than that ordinarily felt in such operations. The results of the attempt are likely to be extraordinarily important, for, if brought to a happy conclusion, the reform will affect the currency of an area and population much larger than have been involved in any similar European undertaking. Moreover, the peculiar obstacles to be encountered and the unfamiliar methods employed in overcoming them lend to the experiment an interest entirely its own. And, lastly, the influence of the new Russian measures upon some important phases of the bimetallic controversy is weighty.

Outside of Russia, it may pretty safely be said, the currency of Europe as a whole is now permanently on a gold basis. Germany is unlikely to recur to a silver policy. A disruption of the Latin Union would probably have little or no effect upon current conditions in the monetary world, inasmuch as none of the countries involved would think of altering their monetary systems in favor of bimetallism. England and the Scandinavian Union are doubtless firm in their allegiance to the existing *régime*. The Austrian monetary reform may be considered a success. Russia, alone among the principal European nations, has hitherto failed to make any adequate attempt at conforming her monetary system to the demands of the commercial world, or to relieve

her population of the inconveniences and losses arising from a fluctuating currency.

In current discussions this inaction has sometimes been ascribed to an unwillingness to adopt gold as the basis of the monetary system. Some have maintained that the actual recurrence by Russia to the use of silver in place of her irredeemable notes would once more restore the fabled ratio of 15½ : 1; thus rendering possible the adoption of an international bimetallic policy. Others have argued that an attempt to redeem the notes in gold would result in a rise in the price of that metal great enough to defeat the attempt at once. The ultimate repurchase by Russia of silver sufficient to redeem the notes and furnish a metallic currency has in some quarters been anticipated as an event likely to occur in the immediate future and to mark an epoch in the history of the silver market.[1]

But the facts have disappointed all expectations of a rise in the quotation of silver, as well as those of a similar movement in the value of gold consequent upon the action of Russia. The reform has not been accompanied by the supposed results. It has apparently not advanced the cause of bimetallism by a hair's breadth, but has, if anything, retarded its supposed progress. The experiment has, however, added an instructive experience to contemporaneous monetary history, and though it presents numerous analogies to similar operations in other countries it has (as already remarked) many elements of individual interest.

The present paper attempts to review cursorily events leading up to the present measures of reform, and to explain the state of things which actually exists.

I.

The earlier moneys in use in Russia, as was the case with most other European states, were heterogeneous in character.

[1] *E. g.*, Mr. Moreton Frewen, as late as January of the current year, stated in various journals that Russia was on the point of resuming specie payments in silver, and expressed the opinion that this would restore the ratio of 15½ : 1.

No monetary organization of any sort is met with prior to the beginning of the eighteenth century. Until the end of the fourteenth century, foreign coins were exclusively used, and the extreme looseness of the composition of the empire made it possible to employ, in the different provinces, coins varying widely in all respects. In the seventeenth century broadened commerce led to an influx of Dutch and German coin. Up to the time of Michael Romanof (1613–1645), coins were struck by private individuals. Romanof and Alexis Michaelovitch[1] (1657–1662) took over this function to the government, but the latter debased the coinage by issuing coins of high denominations in copper instead of in gold. All commodities rose enormously in price, and popular revolts were the result.

The first real system was introduced by Peter the Great. A ukase of 1701 ordered the coinage of 50, 25, and 10-copeck pieces in silver (100 copecks = 1 ruble). The fineness still remained indeterminate, but there was now some correspondence between market and face value. Three years later the coinage of the so-called ruble (silver) was ordered. The ukase of 1701 had also provided for the coinage of gold ducats, 93 parts fine (a piece of pure metal being said to be of the fineness of 96), at the rate of 118 to the pound. In 1711 the fineness for silver coins was fixed at $\frac{72}{96}$. Of the pound $\frac{72}{96}$ fine, 14 rubles 40 copecks were to be struck so that the silver ruble would possess a fine content of 4 solotnik 82⅔ doli. The ratio of gold to silver was thus 1 : 13.879. In 1718, ducats of gold at a fineness of 75 were ordered coined at the rate of 100 (instead of 112) to the pound. The fine content was to be 36 doli, the ratio thus 1 : 12.963. Later, military needs led Peter to lower progress-

[1] See on this subject G. MICHAELOWITSCH, *Russlands Münzen;* ALEX. BRUCKNER, *Kupfergeldkrisen;* CHAUDOIR, *Aperçu sur les Monnaies Russes.* Also the rescripts of MAYER (*Münzwesen und Edelmetallproduktion Russlands*) and RAFFALOVICH, *Appendix VIII* to his translation of *Shaw's History of Currency* (*Histoire de la Monnaie,* pp. 359–65). See also for latest legislation (in available form) and an introductory sketch of the early history, *Bulletin de Statistique et de Législation Comparée,* vol. v. 1, 1886, pp. 204–18, or HAUPT's copy of a part of the introductory sketch in *Arbitrages et Parités,* last edition, art. "Russia."

ively the fineness and content of the coins. A pound of copper was coined:

From 1700–1701	into	12	rubles	80	copecks[1]
From 1702–1703	"	15	"	40	"
From 1704–1718	"	20	"	0	"
From 1718–1722	"	40	"	0	"

Money finally sank in the market to one-tenth of its face value, but retirement of the copper was begun in 1730; and by 1757 much the larger part had been withdrawn and silver reappeared. No alteration in the system nominally existing was made until 1730, when the content and weight were so altered as to raise the ratio from 1 : 13.879 to 1 : 13.569, and in 1749 ducats were ordered coined at a fineness of 94⅔ (0.986).[2] The coinage of "imperials" at $\frac{88}{96}$, weighing 3 solotnik 85 doli was inaugurated in 1755. Peter III adopted the fineness of $\frac{72}{96}$ for silver coin, and silver rubles were struck at the rate of 17 rubles 16⅔ copecks to the pound, this being equivalent to a ratio of 1 : 11.845. Various other alterations followed, the principal of which occurred under Paul I, when (January 20, 1797) the fineness of 72 was displaced by that of 83⅓, and the content of the ruble was fixed at 3 solotnik 3.969 doli, a ratio of 1 : 17.924. The measures passed in October of the same year, however, substituted for this content of the ruble that of 4 solotnik 21 doli. At the same time the fineness of the half imperials was raised from 88 to 94⅔, a pound of gold being thus equivalent to 336 rubles 49 copecks—a ratio of 1 : 15. Platinum coins also were issued from 1828 to 1845. The new ratio persisted, though the content and fineness of the coins were sometimes altered, until 1839, when Emperor Nicholas, in order to bring the monetary system into some accord with the *régime* in use in most of the principal European countries, ordered that gold coins be henceforward allowed to pass at an agio of 3 per cent., and that they be so received at government offices. The ratio was thus practically lowered to 1 : 15.45. This ratio, although not in harmony

[1] MAYER, *Münzwesen und Edelmetallproduktion Russlands*, p. 10.

[2] The same as the Dutch "ducats."

with the French ratio of 1 : 15½, was sufficiently near it to overcome some of the inequalities between nominal and real value previously existing.

Further alterations in the prevailing system were suggested by a monetary commission which, after a session of thirteen years, made certain recommendations in 1844. No change, however, was made in the *régime* actually in existence, and as the defects in the old and imperfect currency began to grow more glaring, owing to the more rapid progress of other countries in monetary affairs, a new commission was, in 1859, established by the Department of Mines, its duty being that of recommending reforms. This commission finally proposed the following innovations :[1]

(1) Increase of gold circulation by the coinage of pieces smaller than the half imperial.

(2) Definite fixation of the relation in value between gold and silver coin.

(3) Introduction of a regular token coinage.

(4) Change in the permissible variation of fineness and weight of the smaller subsidiary coin.

(5) Introduction of platinum coin.

(6) Various changes in the copper coinage.

(7) Equalization and systematization of the denominations.

It was explained in the report that, at such times as the price of silver stood higher than the ordinary quotations, a heavy export of Russian silver coin toward Persia and China was observable. A difference between the value of silver rubles in their coined form and as bar silver was also noted. From a pound of fine silver were coined 21 rubles 75½ copecks, yet the market price of the pound of fine silver $\frac{84}{96}$ fine was 22–24 rubles. Moreover, inasmuch as the silver ruble had now a content of 405 doli, it exceeded its nominal value by 5½ copecks, thus stimulating their exportation. A reduction of the fineness to 72 was therefore recommended. This suggestion was acted

[1] See MAYER, *op. cit.*, p. 18, for summary, also MICHAELOWITSCH, *op. cit.*, for legislation.

upon. In 1860 the fineness was reduced 15 per cent., and silver subsidiary coins were ordered to be struck at $\frac{750}{1000}$. This measure nevertheless proved inadequate, and in 1866 the fineness was reduced to $\frac{500}{1000}$. The wish—expressed in many quarters—that a smaller unit corresponding to the French franc might be substituted for the ruble was not granted.

Just at this moment, the needs of the treasury and the resulting overissues of paper and depreciation of the state credit resulted in driving practically all gold and silver coin from free circulation (see section II). The so-called paper ruble sank to ¼ and great abuses were the result. A long series of adverse political events and the accompanying unfavorable commercial conditions, taken together with the low credit of the state, the absence of coin from the circulation, and largely also from the bank reserves, and the redundancy and depreciation of the notes, prevented any further action for many years. Not until 1885 was it thought expedient to introduce definite measures of reform. The problems confronting Russia included not only the restoration of the "parity" between paper and coin, but a radical transformation of the technical conditions for the manufacture of the latter, as well as a change in the ratio and a general renovation of the whole monetary system.

Having thus briefly examined the course of events down to 1885, it is now possible to consider the law of December 7 of that year[1] which took effect January 1, 1886, and upon which the present monetary system is based. This law retained the *silver* ruble as the monetary unit, dividing it into 100 copecks and assigning it a fine content of 4 solotnik 21 doli pure silver. Gold was also to be coined in denominations of 10 and 5 rubles, the fine content of these coins being respectively 2 solotnik 69.36 doli and 1 solotnik 34.68 doli. This was tantamount to a ratio of 15½ : 1. It is evident that, had there been any intention of attempting to establish a "concurrent circulation," this first provision must have rendered the act nugatory at the outset.

[1] For the text see *Bulletin de Statistique et de Législation Comparée*, vol. xix. p. 209 *et seq.*

No such intention, however, existed. It has already been noted that the real medium of exchange of the country was paper, and that little metallic money of any sort was to be found in actual circulation. This being the case, the sole object to be attained in establishing a relation between gold and silver was that of adopting a ratio such as would be most advantageous to Russian dealers on foreign markets. Inasmuch as the ratio of 15½ : 1 was that prevailing in France and the Latin Union, it seemed on the whole best suited to carry on foreign transactions.[1] The denominations employed in the new monetary system were substantially the same as in the old, save that the coinage of the so-called "Russian ducats" was suspended, and that of ten-ruble pieces was substituted. This left the standard gold and silver coins as follows:

Gold	Silver
10 rubles	1 ruble
5 rubles	50 copecks
	25 copecks

As will already have been observed, the fineness and weight of the early money had been stated in terms of the Russian pound weighing 96 solotniks (1 solotnik = 4¼ grams) each consisting of 96 doli. The fineness of Russian gold coin being expressed by the fraction $\frac{88}{96}$ and that of the Russian silver being $\frac{83\frac{1}{3}}{96}$, the reduction to the metric system had been tedious, and in foreign transactions nearly always resulted disadvantageously to the holder of Russian coin. One of the most noteworthy features of the new law was, therefore, its acceptance of the fineness of $\frac{9}{10}$ for gold and silver coin alike.[2] Careful regulations governing wear, tolerance, etc., and the mechanical conditions for the manufacture of coin were also prescribed.

It is unnecessary to go into greater detail in the study of this act. It was clearly no more than a transition measure, and was to remain of merely nominal effectiveness until new monetary conditions should prevail. Its main current importance lay in the

[1] *Cf.* on this point, *Journal de St. Pétersbourg*, January 5–17, 1886.

[2] *Bulletin de Statistique et de Législation Comparée, loc. cit.*, art. ix.

evident desire to approximate as closely as possible to the condition of France and the Latin Union. These countries being on a gold basis, the new law could not be regarded in any other light than as the expression of a desire to place the Russian currency on the same footing.

No change has been made in the system established by the Act of 1886. The law went into immediate effect, and in 1891 it was reported that "the unification of the monetary system has been brought to a close by the suppression of the differences in monetary unit which still existed upon the confines of the empire."[1]

II.

In order to comprehend thoroughly the difficulties to be encountered in reforming the Russian monetary system it will be necessary to outline briefly the history of the paper currency.

Paper money was first introduced in Russia in consequence of the financial needs of the government of Catherine II. In 1769, two banks, located at St. Petersburg and Moscow, were authorized to issue paper assignats to a sum not in excess of the "effective capital" of the banks, the state credit being pledged for the redemption of this paper.[2] The issue varied in amount from time to time, and was increased about 1770 to meet the needs of the war with Turkey. However the notes continued until 1786 to be guaranteed by a gold reserve and suffered a depreciation of but 1 per cent. or less. In 1786 the amount in circulation did not exceed 50 million rubles. During this year, financial necessities became more urgent, and the issue of notes was finally raised to 100 millions.[3] Further, a serious modification in their character was introduced. They were no longer to depend for their value on a metallic reserve but solely on the state credit. By 1794 the issue had been increased, on one

[1] *Rapport du Ministre des Finances à S. M. l'Empereur sur le budget de l'empire pour l'exercise 1891*. See also *Économiste Russe*, St. Petersburg, January 1–13, 1891, p. 92 *et seq.*

[2] *Annali di Statistica*, Serie 2ª, vol. xxiv. (Rome, 1881), "Il corso forzoso in Russia," p 36.

[3] *Ibid.*, p. 42.

ground or another, to 124 millions.[1] A decrease in value had naturally taken place simultaneously with the change in the nature of the notes. In 1787 they were quoted at an agio of 3 per cent. This discount rose in 1794 to 41; and in 1796, at the death of Catherine II, the notes then amounting in all to about 157 million, it reached 46. Measures taken by Paul I, in 1797, looking to the ultimate redemption of the notes, reduced it to 26, but this better quotation was not long maintained. Unfavorable economic conditions and the adverse political situation tended to depress the price of the paper ruble, while the needs of the treasury seemed to compel an increase of the quantity in circulation. In consequence of the war against France and the campaign in Turkey, the issue was raised in 1810 to 577 million rubles.[2] In December 1810, the silver ruble was quoted at 401 in assignats.

During the period 1812–1817, various governmental measures attempted to regulate the volume and value of the notes. Nevertheless they were steadily increased in volume reaching an aggregate of 836 millions in 1817, although their value did not sink very seriously below its lowest level for the preceding period. It continued in fact at a point slightly above 25 per cent. (measured in silver). A new era opened in 1817. The ukase of April 16 suspended the issue of assignats. Retirement was begun and proceeded steadily. By 1823 the volume of notes in circulation had been reduced to 595.7 millions, but the quotation was not materially higher, amounting in the last-mentioned year only to 26⅜ (in silver). The sound policy, however, was persisted in, and under the finance minister Cancrin, rapid progress was made in bringing back the notes toward par, in reducing the redundancy, and in restoring coin to the circulation. Many measures of reform were introduced, and the work of reorganizing the finances was assisted by considerable industrial and commercial progress. The final measure in the series of enactments intended for the rehabilitation of the notes was

[1] See KULOMSIN, *The Assignats during the Reign of Catherine II.*

[2] *Annali di Statistica, loc. cit.*, p. 52.

that of June 1, 1843, which provided for the substitution of "credit notes" for the assignats. The new notes were to be secured by silver deposited in the so-called "Bank of Commerce," and "notes of deposit," possessed of the same power as legal money, might be obtained by anyone willing to deposit silver in exchange. These measures had the desired effect in restoring confidence. The paper which, as late as 1839, had exchanged for silver at the rate of 3.46, despite all preceding attempts to raise its value,[1] was soon quoted at a much better figure. Conversion proceeded with encouraging speed, and by 1848 only 15 million assignats remained in circulation. The notes now stood practically at par, and even in London they were quoted at 95.7 copecks.[2]

These more favorable conditions continued to exist until 1853 when the political outlook again became dark. In that year war needs led to large issues—illegal if judged by the new banking laws which had done so much to bring about a sounder situation. The period 1853–1860 was marked by constant increase in the circulation, decrease in the deposits constituting the metallic reserve, and suspension of redemption. Redemption was not at first openly withheld, but was discouraged,[3] and finally in 1857 was refused.[4] In the meantime the note issue had risen from 333.4 million rubles (in 1853) to 735 million rubles (in 1857), while the reserve fell from 161.3 million to 141 million rubles.

In 1860 the condition of the currency had become so bad that radical measures were seen to be a necessity. It was decided to place the note issues as well as the general credit system of the country upon a new basis, and to this end the creation of a state bank was authorized by the emperor (May 31, 1860). The bank was to go into operation June 3, 1862, and was to have a

[1] *Annali di Statistica, loc. cit.*, p. 131.

[2] *Ibid.*, p. 144. [3] *Ibid.*, p. 154.

[4] On this curious point compare WAGNER, *Russische Papierwährung* (Riga, 1868), p. 123. "Bis zum Jahre 1854 war das Russische Creditbillet strict einlösbar auf Verlangen des Inhabers. Im Laufe dieses Jahres scheint aber die baare Einlösung stillschweigend und vermüthlich nicht auf einmal sondern allmählich eingestellt zu sein."

capital of 15 million rubles. Its principal functions were to be those of assisting the state credit and taking charge of the currency. It was also to perform a general business. There can be no doubt that this step was one of first-class importance. It was the first attempt at conducting the state business in a systematic way and marked an entirely new financial era. "Das Jahr 1861," says Professor Wagner,[1] "bildet für Russlands innere Entwickelung einen Epochemachenden Abschnitt."

At the moment of its creation, the bank had liabilities of 705 million rubles—that amount being the volume of notes in circulation. Its assets consisted of the redemption fund (specie) amounting to 92.5 million rubles, and a debt of the treasury equal to 612.5 million rubles.[2] Shortly after the government issued the obligations known as "billets metalliques 4 per cent. de la Banque," one part of which was to serve for the retirement of notes, and the other for the diminution of the treasury debt. In order still further to augment the redemption fund, a loan of 15 million pounds sterling was floated during 1862, and with these added resources the bank was ordered to resume specie pay ments. The attempt proved a failure, the fund, which amounted to only one-fourth of the notes, being quite inadequate. The situation was aggravated by the heavy loans which the bank was obliged to make to the government. These grew even heavier during the year succeeding 1870 and the period of the Turkish war.[3] In order to meet these new demands, the bank was allowed to increase its note issue. A reduction was unexpectedly found possible in 1879, when the floating debt was consolidated and 100 millions of notes were withdrawn. This left exactly 1100 millions still in circulation. No further improvement was attempted during the next two years. Late in 1880 better political prospects encouraged further steps of reform. Finally, the ukase[4] of January 1, 1881, ordered the state treasurer to pay

[1] *Op. cit.*, p. 116.

[2] Compare SAY, *Dictionnaire des Finances*, vol. i. p. 347. [3] *Ibid.*

[4] For text see *Bulletin de Statistique et de Législation Comparée*, 1881, vol. i. p. 60. Also *Bulletin Russe des Lois*, January 2 and 3, 1881.

"without delay to the Bank of Russia such sum as may be necessary in order to reduce to 400 million rubles the debt resulting from the expenses incurred by it for account of the state; to amortise this debt, that is to say 400 million rubles, by annual installments, beginning with the year 1881, and at the rate of 50 million rubles payable each year by the treasury to the bank; to destroy the notes according and in proportion to their accumulation in the treasury of the bank, conformably to the needs of the fiduciary circulation." It has been already seen that the outstanding notes amounted to 1100 millions in 1879, at the close of the operations of consolidation and withdrawal. Certain minor independent operations had still further increased this sum. At the opening of 1881 it stood in the neighborhood of 1122 millions. Thus in order to reduce the surplus debt to 400 millions an immediate payment of only about 17 millions was necessary.[1] The payment of 50 millions of specie per annum for the amortisation of the debt proved too heavy a burden. Consequently it was provided by the ukase of June 8, 1884, that the annual payments, instead of being made in gold or silver, might be liquidated in 5 per cent. gold bearing *rentes*, or in 5 per cent. currency *rentes*, it being understood that these *rentes* were to be taken by the bank only at market value.

Under this new regulation the treasury paid to the bank during the years 1881–1889 (inclusive) 243,471,445 rubles, partly in specie, partly in *rentes* (which were at once negotiated), and 173,528,555 rubles in 5 per cent. *rentes*, which were not negotiated but held among the assets of the bank.[2] From the proceeds of the 243,471,445 rubles already mentioned, a total of 87 millions in credit rubles was destroyed.[3] As we shall later see, it was then considered advisable to cease the contraction of the currency, and the remainder of the notes in hand amounting to some 63,736,851 rubles were transferred from the account of 'temporary issues" to that of "notes guaranteed by redemption

[1] It will be remembered that a part of the original capital of the bank was the debt of 612.5 millions due from the treasury. This of course was to remain.

[2] *Bulletin Russe des Lois*, December 11 [23], 1894, No. 202. [3] *Ibid.*

funds,"[1] and this fund was strengthened by transferring to it 40 million rubles in gold from the ordinary commercial balance of the bank. The remainder of the 243,471,445 rubles, or 92,734,591 rubles, remained unprovided for, and was held by the bank under the title of "temporary issues." This sum the bank was, shortly after the conclusion of the operations just detailed, ordered to hold at the disposal of the treasury to meet the expenses connected with the construction of the new Siberian railway (ukase of December 10, 1892). It was directed that the sum should, if necessary, be returned to the treasury as a new loan in installments not exceeding 40 millions of rubles per annum. Economic conditions proved exceptionally favorable and it was not found necessary to have recourse to this form of loan. It was, however, deemed inadvisable to contract the currency by the destruction of such a mass of notes. For reasons which will demand consideration at a later point, it was believed that the currency should be expanded rather than decreased in amount. The whole operation was therefore brought to a conclusion by a method different from that originally intended. The ukase[2] of December 9, 1894, ordered the minister of the treasury:

(1) To carry to the account of notes *permanently issued* and guaranteed by reserve funds the 266,263,146 rubles which appear among the liabilities of the Bank of Russia under the rubric "commercial operations" as emitted temporarily and which have been in circulation since 1878.

(2) To annul the 5 per cent. *rentes* returned to the Bank of Russia as the equivalent of the notes mentioned in (1) and which have not yet been realized upon, their value figuring up to the present time in the assets of the bank to the extent of 173,528,555 rubles.

(3) To liquidate the 92,734,591 rubles due from the imperial treasury to the Bank of Russia (notes specified in (1)), and to transfer from from the reserve proper of the Bank of Russia 65,433,691.07 rubles in gold, which form the equivalent, at the purchase price, of the 92,734,591 rubles above mentioned.

[1] This was ordered by the ukase of July 10, 1887. (See *Bulletin Russe des Lois*, for corresponding date.)

[2] See *Bulletin Russe des Lois*, Dec. 11 [23], 1894, No. 202.

With this brief survey, we may leave the immediate history of the paper currency. Nothing has been said of the various temporary emissions (guaranteed by gold) made within recent years. These were necessitated by fortuitous circumstances and were quite independent of the management of the paper currency as a whole.[1]

III.

In making a brief survey of the financial condition of Russia, preliminary to considering the history of the recent movement which has culminated in the attempt to place the currency upon the gold basis, it is impracticable to give more than the barest outline. Until comparatively recent years Russian financial affairs have been administered with a secrecy unknown in other modern states, where the policy of fostering confidence by great openness in the conduct of public business has generally obtained. A Russian budget was published for the first time in 1862. In that year, a special committee was appointed for the reorganization of the finances and a new minister, Count Reutern, was named on January 23. Financial prospects were gloomy. The Crimean War had left behind an immense burden of debt and of irredeemable paper, and the state credit was low. It seemed probable that large government expenditures in Poland would be necessary, and it was perceived, at this early date, that a repurchase of the railways of the empire must be effected, for their exploitation by foreign capital was considered injurious economically and politically.

Owing to these various adverse circumstances and the lowness of the development of the country's resources, effort to introduce a new order of things was for some time ineffectual.

[1] The issues referred to were necessitated by the inelasticity of the currency. Thus, in 1888, 30 millions (guaranteed by gold) were issued to move the crops and were retired in November and December of the same year. Opposite causes (bad harvests, consequent high prices and necessary exports to famine-stricken provinces) led to an extraordinary issue of 75 millions in the autumn of 1891. This again was guaranteed by an equal reserve of gold. In 1892, 75 millions additional were similarly issued. They were retired in 1894.

Small exports of cereals and of raw materials in general—Russia's chief products—and a constant tendency to consume more than was produced, the difference between consumption and production being made up by loans, were the most general features of the economic situation during the years immediately succeeding 1860.[1] As already seen, no progress toward obtaining a better basis for the currency was made. Only one measure of Reutern's administration demands attention here. This was the imperial decree of November 22, 1876, passed in accordance with the suggestion of the finance minister, and directing the collection of customs in gold. For some time the revenue from customs had been on the decline, owing to the depreciation of the notes. The prospect of a decreasing income was not to be borne at a time when revenue was already inadequate. The new edict therefore ordered, (1) that customs taxes be payable in gold; (2) that duties not exceeding 5 rubles 15 copecks might be paid in silver. They were also to be payable in notes on condition that, in this case, their amount be doubled.[2]

This of course was equivalent to recognizing a depreciation of 50 per cent. in the value of the notes notwithstanding the fact that at the time of the decree they were constantly received

[1] From *Bulletin Russe de Statisque Financière*, 1895, vol. i. pp. 208 *et seq.*

[2] For text see *Bulletin de Statistique et de Législation Comparée*, 1887, vol. i. p. 105.

Year	General imports into Russia	General exports from Russia	Year	General imports into Russia	General exports from Russia
1871.....	307.3	307.9	1883.....	347.5	395.7
1872.....	369.5	377.7	1884.....	339.1	372.6
1873.....	372.1	306.1	1885.....	276.2	341.6
1874.....	410.1	375.6	1886.....	259.7	297.4
1875.....	457.3	328.9	1887.....	223.8	348.8
1876.....	386.5	324.2	1888.....	223.7	460.0
1877.....	216.9	356.7	1889.....	284.9	505.2
1878.....	379.4	393.8	1890.....	293.8	508.6
1879.....	370.8	396.0	1891.....	250.5	486.4
1880.....	407.2	326.0	1892.....	252.0	308.7
1881.....	340.4	333.0	1893.....	293.5	400.7
1882.....	357.2	389.4	1894.....	.....	.....

In millions of rubles, gold.

by the population at a discount of about 25 per cent. The law in fact practically constituted an indirect increase in the customs. This, however, was not its most important feature from an economic point of view. The fact that although the monetary standard of Russia was nominally silver, the administration had seen fit to measure its dues in gold was far more noteworthy. Coming as it did so soon after the monetary action of various countries from 1873–1876, it indicated a distrust of silver and a wish to depart from the use of that metal as a monetary standard, which would subsequently be of moment when the opportunity for monetary reform should arise.

Financially, the measure was abortive and Reutern asked for his dismissal. Neither of his successors[1] obtained better results. The currency continued in bad condition and was not decreased in amount as had been promised. Meantime bad harvests in 1880, and a consequent unfavorable balance of trade and exchange, made reform practically impossible. There was little prospect of improvement until Herr Bunge undertook the financial ministry with a new programme. The debt was to be refunded, economy introduced, a credit system developed, the notes redeemed and the currency system improved; the two latter being the principal features of the policy.[2]

Circumstances were unpropitious. The notes were quoted lower in 1883 than ever before, and, although a slight improvement was visible during the two years following, it was not maintained. 1886–1889 was a period of phenomenally low quotations. Heavy expenditures for railways and the army in 1883 necessitated new loans. The price of wheat was lower than anticipated and exports scarcely increased, while political prospects were unusually bad in Afghanistan and Bulgaria. Nevertheless, some preliminary measures of reorganization were actually taken, while the fact that a sounder policy was at least attempted, and that some legislative measures for placing the

[1] Grieg and Abaza.

[2] It was only through the other measures, however, that the latter two reforms were to be attempted. The establishment of a sound basis for reform became a fixed policy from this time on.

monetary system on a new basis had been introduced, tended strongly to raise public credit and assist improvement.

Conversion of the debt and repurchase of railways were first seriously undertaken by Wiesnigradsky who succeeded Bunge in 1887. The most important feature of this minister's administration, both as regarded general economic policy and the reformation of the monetary system, was the cessation of the deficit. During his administration a surplus constantly existed. It amounted in 1888 to 53, in 1889 to 65, in 1890 to 60, in 1891 to 13, in 1892 to 57, and in 1893 to 93 millions of rubles.[1] The public debt had amounted in 1881 to 1242.6 million rubles coin and 1559.5 million rubles credit, and, although this amount had increased by January 1, 1895, to some 5589 millions paper, owing to the purchase of old railways, construction of new ones, etc., the interest charge had been so reduced through the refunding operations and the improvement in public credit which permitted the floating of new loans at reduced rates of interest that it amounted in 1895 to only 257.3 millions as against 237.8 millions in 1881, or an increase of 1.12 per cent. of the increase in the debt. From 651 millions in 1881, the income rose to 1025 millions in 1893, a rise of 57 per cent.[2] Four per cent. obligations which had stood at 75 in 1880 were quoted in 1894 at 95.[3]

The various measures which were producing so advantageous a change in the financial condition of the empire, and were thereby preparing the way for the return to a sound monetary policy, at the same time tended to bring about a better quotation of the credit ruble. Although the so-called gold ruble had been quoted in 1887 at 1.80 in paper, it averaged but 1.53 in 1893—an important improvement. Contemporaneously with the notably better condition of the finances, economic and industrial progress was becoming much more marked. The opening of large new wheat areas and the introduction of better and more

[1] See *Règlement Définitif du Budget pour l'Exercise*, 1887 (St. Petersburg, 1888). Also same document for following years.

[2] *Ibid.* [3] *Économiste Français*, 1895, p. 69.

thorough agricultural methods increased the annual output and consequently the export of cereals in a very high degree.[1] This export nearly doubled between 1860 and 1891.

Prospects for the inauguration of the long expected monetary reform were thus apparently much brighter than ever before at the entrance of M. de Witte upon the duties of finance minister in 1893. Furthermore, a curious phenomenon for which many were at a loss to account had been observed. This was the rise in the quotation of the paper ruble above the quotation of the silver ruble, both being compared with gold. In 1892, for the last time, the average yearly quotation of the silver contained in 100 silver rubles stood above 100 rubles in notes. In considering the importance of this fact, it must be borne in mind that a coin circulation no longer existed. Neither gold nor silver could circulate so long as the course of the paper remained below par as measured in either. All metal had, long before this date, left the country or been hoarded by the government, the bank, or private individuals. Consequently the fact that paper had risen in price, apparently permanently, above one of the metals was a fact of prime importance. It implied that Russia could now be provided with a coin circulation without effort or sacrifice on her own part, since many would now be anxious to bring silver to the mints in order to exchange coin for the now more highly valued notes.

The phenomenon, aside from its immediate practical importance, was also full of interest for monetary theorists. Long since it had been observed that there appeared to be little con-

[1] AVERAGE EXPORTATION OF CEREALS FROM RUSSIA BY QUINQUENNIAL PERIODS.
In millions of puds. One million puds = 16,380,500 kg.

1866–70	127.8	1875–79	279.3	1884–88	363.3
1867–71	147.2	1876–80	279.8	1885–89	394.8
1868–72	149.2	1877–81	275.9	1886–90	413.3
1869–73	163.9	1878–82	282.4	1887–91	437.6
1870–74	191.4	1879–83	275.3	1891	389.5
1871–75	193.2	1880–84	267.5	1892	195.3
1872–76	196.2	1881–85	294.0	1893	403.2
1873–77	218.6	1882–86	305.8		
1874–78	256.2	1883–87	322.6		

nection between the price of the notes and that of bar silver or of bar gold, or between their quotation and the varying volume and of the gold reserve set apart to redeem them. It had been commonly supposed that the price of bar silver, coinage of course being free, afforded a maximum limit which could not be overpassed. However, the new developments, due to the steady fall in the price of silver on the world's market, and the not so steady though marked rise in the price of Russian obligations on the bourses of Paris, London, and Berlin, made it apparent that the paper was now quite independent of the price of silver, and that should no silver coinage be allowed it might reasonably be hoped that a gold basis for the currency could be obtained without too great sacrifice. Just how this result was to be obtained will presently be studied more carefully; it is the effect produced by the circumstances just detailed upon governmental legislative action that must be especially noted at this point. It needs only to be recalled that customs duties had now for some time been measured in gold, and that loans had, since 1881, been commonly stated in terms of gold rubles. Both these actions on the part of the authorities indicated a tendency to look to gold rather than to silver as the ultimate monetary standard. As will presently be seen, too, gold rather than silver had usually been coined for account of the government. It surely was not to be expected that the hardly won rise in the quotation of government funds would be suffered to fall into jeopardy for the lack of suitable legislation. It was clear that to allow an influx of silver would mean the withdrawal of paper from circulation so long as its value continued in excess of that of silver; and this process, if long enough continued, would mean the quotation of government obligations in silver when once the standard of the country had been retransferred from paper to silver, so that in this case they would, in addition to their own elements of instability, possess that of being stated in terms of an unstable metal.[1] Such a change would also have resulted in serious

[1] For exposition of this point see *Bulletin de Statistique et de Législation Comparée*, 1893, vol. xxxiv. p. 399. This exposition has been transliterated by HAUPT in *Arbitrages et Parités*, 8th ed., p. 745.

injury to the inhabitants of Central Asia, where Russian paper circulated in large quantities.

The closing of the Indian mints to silver (June 26, 1893) had not been lost upon the Russian administration. Even before the passage of the Sherman Act (1890), silver had sunk below the course of the credit ruble. This, and subsequent heavier imports of silver and increased coinage of that metal, gave fair promise that the experience of France and the Latin Union would be repeated in the case of Russia. There was every reason to expect a heavy deposit of silver at the mint, to be exchanged, when coined, for the very notes which had been exchanged for it some years before. The possibility had been foreseen as early as 1889, but the many impediments to official action had prevented the taking of definite steps. Renewed depreciation of silver at last attracted attention very powerfully to the subject. The attempt to lower the somewhat improved valuation of the Russian ruble and to quote government obligations at a lower figure, which it was believed were being made in more than one quarter, were noted by M. de Witte in his report upon the budget of 1893,[1] and the accumulation of a mass of gold in the hands of the administration as a defense against such aggressions was recommended. It was not, indeed, precisely explained how such a reserve was to be used, but from various references to the existing circulation of notes guaranteed by gold (temporary issues), it was evident that the plan in view was nothing less than to place the whole system of notes upon the same footing as the guaranteed issues, or, in other words, to take the first steps toward a pure gold standard. This would do little toward an effective improvement in the existing status if the threatened invasion of silver were allowed to proceed. The preliminary, therefore, was the prohibition of further coinage of silver and of the acceptance of further deposits of that metal for coinage. This was effected by the ukase of the 16th–28th

[1] *Rapport du Ministre des Finances à S. M. l'Empereur sur le budget de l'empire pour l'exercise, 1893.* St. Petersburg, 1892. *Cf. Bulletin de Statistique, ante cit.*, vol. xxxiii. pp. 218 *et seq.*

July, 1893,[1] which not only abrogated the right to free coinage of silver but also prohibited the importation of all foreign silver coin whatever into the empire. The sole exception was made in favor of the Chinese *iamb*, which might still be brought in, although only over the continental frontier. The time when the decree was to go into effect might be fixed by the minister of finance, and was in fact set by him at September 13th of the same year.

The rise in the price of the paper to a point above that of silver brought with it, however, or rather intensified, certain difficulties which could not be met by the mere passage of an act against silver. For a long time the Russian paper ruble had been a favorite subject for speculation on foreign bourses, especially on that of Berlin. This was supposed to intensify the fluctuations in its price. It was thought in 1893 that certain operators were making a special effort to depress the quotation of the ruble. In order partially to meet this danger it was determined to levy a tariff upon the export and import of large sums in paper currency. The ukase of the 29th March–10th April, 1893,[2] consequently provided for the levy of a duty of one copeck (paper) on each 100 rubles or fraction thereof imported or exported over the Russian frontier. The tax thus amounted to .01 of 1 per cent. The new law excited much indignation in many quarters and especially in Berlin.[3] This dissatisfaction was intensified when M. de Witte himself entered the speculative market, and through his agents purchased large quantities of paper rubles on the Berlin bourse.[4] These were shipped to St. Petersburg, and it was even rumored that the export of paper currency from Russia in large quantities would now be prohibited.

More extreme precautions were employed at home. As early as January 1893 the finance minister had notified all credit

[1] For text see *Bulletin de Statistique et de Législation Comparée*, 1893, vol. xxxiv. p. 269.

[2] For text see *Économiste Français*, Sep. 23, 1893; or *Bulletin Russe des Lois* for April 11.

[3] See *Deutsche Oekonomist*, 1893, pp. 216, 260. [4] *Ibid.*

institutions operating in Russia that their taking part in foreign speculative operations upon the paper ruble would be considered incompatible with the authorization given these institutions to carry on business. In June 1893 purely speculative dealings were forbidden.[1] Lastly, a reform of the Russian bourses was planned by M. de Witte, the nominal design being that of hindering speculation and improving the course of the ruble.

Whatever may have been the effect of these measures, it is certain that toward the close of 1893 the quotations of the ruble became much steadier, and the tendency to improvement in its price was maintained.[2] Thus encouraged, M. de Witte steadily pursued the policy he had outlined at the opening of his career, working slowly toward the reformation of the currency through a sound loan system, establishment of a gold reserve, abstinence from new issues (unless guaranteed by gold) and the stimulation of exports and reduction of imports in order to bring about an equilibrium. The next actual step, however, in preparing the way for the gold standard was a negative one. Hitherto, as already stated, the legal monetary unit had been the *silver* ruble,

[1] *Rapport du Ministre des Finances à S. M. l'Empereur sur le budget de l'empire pour l'exercise*, 1894, St. Petersburg, 1893.

[2] For criticism of the policy see *Die Export*, Berlin, 1893, No. 10, pp. 145–6. But compare following table.

(1 ruble credit (actual exchange)=Mark 2.16. 1 ruble gold=Mark 3.24. 100 francs = 81 Reichsmark.)

AVERAGE ANNUAL QUOTATION OF 100 CREDIT RUBLES IN BERLIN IN REICHSMARKS.

1871	1872	1873	1874	1875
268.21	275.11	271.41	280.95	278.23
1876	1877	1878	1879	1880
262.74	222.58	207.16	204.74	212.16
1881	1882	1883	1884	1885
213.37	204.60	200.84	205.71	204.68
1886	1887	1888	1889	1890
197.77	181.17	189.31	214.39	235.43
1891	1892	1893	1894	1895
224.57	204.93	212.99	219.97	219.73

From *Bulletin Russe de Statistique Financière* after the *Vierteljahrshefte zur Statistique des Deutschen Reichs.*

and although the notes had had a forced circulation, contracts and obligations must be expressed in terms of silver rubles. The confusion arising from the necessity of a constant comparison of the price of the paper with that of the silver ruble and the determination of the value of both silver and paper with reference to gold was extreme and was in the highest degree detrimental to any sort of stability in commercial transactions.

The retention of a fictitious silver basis for the circulation was productive of great inconvenience. It was now proposed to overcome these evils by allowing the statement of all obligations in terms of gold. In accordance with this design a law elaborated by M. de Witte was brought before the Imperial Council. The terms of the law were simple. It permitted the making of all written engagements, authorized by law, in terms of Russian gold. These might ultimately be liquidated either in Russian gold according to the terms of the contract, or in notes at the quotations current on the St. Petersburg bourse. The proposed act in nowise modified the monetary system. It neither altered the basis of the currency, nor did it entail any expense upon the government. The objects of the new measure have just been sketched. In addition, some believed that such a measure would in a degree relieve the regular autumnal stringency and obviate the necessity of constantly relying on an inelastic circulating medium.[2] The bill met with some opposition. The original draft had contained a clause to the effect that only the so-called "privileged classes" were to be allowed to take advantage of the new provision. Inasmuch as these classes constituted only about 20 per cent. of the population some thought that the greatest benefit would not be obtained from the measure as thus limited. Various other objections were raised, but the bill (with the objectionable clause omitted) became law by the ukase of May 8, 1895,[3] and the finance min-

[1] For text see *Bulletin de Statistique et de Législation Comparée*, 1895, vol. xxxvii. pp. 670 *et seq.*

[2] See *Messager Officiel*, St. Petersburg, April 26–May 7, 1896.

[3] See for text *Bulletin de Statistique, ante cit.*, 1895, vol. xxxvii. pp. 669 *et seq.*, also *Bulletin Russe des Lois*, 1895, No. 80.

ister was further allowed the privilege of making certain taxes and other government dues payable in gold at fixed rates.

These various steps produced a decided effect. After but two years in office, M. de Witte was able to report in the preface to his preliminary budget for 1896 as follows:[1] "By the systematic application of protective measures to the development of national industry the balance of trade, from being unfavorable as it was, has become favorable, and thus one of the essential conditions which assure the duration of the metallic circulation is seen to be created, the commercial exchanges ceasing to be the cause of a constant exportation of coin.

"A considerable stock of gold, representing 61 per cent. of the nominal value of the circulating notes and 91.6 per cent. of their real value, has been gathered. An end has been put to the agiotage on the credit ruble, and this assures to our paper currency firmness and stability. Under the reign of your Imperial Majesty a number of measures looking in this direction have been taken. With the object of facilitating to foreign capital the entrance to the Russian market, the conclusion of engagements in gold money has been authorized. The acceptance of gold by the public treasuries has been decreed, at first for the payment of taxes merely, then for all other payments, and this at rates published by the administration. Now the Bank of Russia and its branches sell and buy gold, they receive deposits of gold, and deliver in exchange receipts payable at sight. Thus the principal means for the re-establishment of the metallic circulation are prepared. . . . . This reorganization ought to be effected in such a way as to produce the least shock and to introduce no modification whatever into existing conditions."

It certainly seemed possible that the monetary reform might be expected in the near future. On the 15th–27th December, 1895, the Bank of Russia and treasury together held 684 million rubles in gold. This sum was distributed thus:

[1] *Rapport du Ministre des Finances à S. M. l'Empereur sur le budget de l'empire pour l'exercise 1896*, St. Petersburg, 1895, pp. 22–3.

Treasury,	191.7
Bank,	43.0
Reserve fund (for redemption),	375.0
Reserve for notes temporarily issued,	75.0
Total,	684.7[1]

Not a few, however, were doubtful as to whether specie payment could be maintained even if once accomplished.[2] Many suggestions regarding the exact method of transition to the gold standard were made from various quarters. In an article evidently emanating from official sources[3] the principal elements in the reform were stated as follows:

(1) The proposed Russian gold coin shall be struck in 10-ruble pieces, each to contain 1 solotnik 78 doli. The $\frac{1}{10}$ part of this coin, the ruble, divided into 100 copecks, will constitute the monetary unit.

(2) The notes will be guaranteed by the whole resources of the state.

(3) They will be issued by the Bank of Russia in the course of regular business, and no longer for the treasury.

(4) The bank must redeem notes in gold on demand.

(5) The existing reserve fund shall belong to the bank, and the difference between it and the notes in circulation shall be the debt of the treasury to the bank.

(6) The bank shall constantly have on hand one-half the amount of its circulation in gold up to 800 million rubles, and above that sum a full gold equivalent.

(7) Unnecessary notes shall be destroyed as they accumulate.

(8) The issue department of the bank shall be subject to inspection.

(9) Silver coin shall not be a legal tender in sums exceeding 50 rubles except at the public treasuries, where it shall be received in any amount, except in payment for customs.

(10) Until retired the present imperials and half imperials shall be received and redeemed in the proportion of 1 ruble of gold for 1 ruble 50 copecks of paper.

[1] See RAFFALOVICH, *Marché Financier*, 1895–6, p. 315.

[2] See *e. g.*, *Die Nation*, Berlin, February 15 and 22, 1896.

[3] *Bulletin Russe de Statistique Financière*, March–April 1896, pp. 180–1 *et seq.*

This last provision was nothing new. Since January 1896 all public treasuries and all railway offices had received gold at this rate. Even as early as September 1895 the bank had declared that it would receive and buy gold at rates equivalent to those at which that metal was equated with paper in the payment of the *droits d'accise*, *i. e.*, at 7 rubles 40 copecks paper for 5 rubles gold, and when this price did not prove attractive it had been raised (November 25) to 7 rubles 45 copecks, and again, December 25, to 7 rubles 50 copecks paper for 5 rubles in gold.[1]

These steps seemed to be quite justified by the course of events. The price of the ruble continued steady and fairly high during the first half of 1896. It was therefore felt by the administration that a decisive step might be taken, and, by the ukase of August 10, 1896,[2] it was provided that the price of the paper ruble should be fixed, up to December 31, 1897, at 66⅔. Until that date gold 10 and 5 ruble pieces were to be received and paid out by the Bank of Russia and its branches, by the railway companies and by all public treasuries, at the rates of 15 and 7½ rubles in paper respectively. This final measure indicated a degree of confidence which had hardly been expected. Subsequent events, however, appeared amply to justify it.

IV.

We are now in a position to study somewhat more critically the prospects for the success of the new measures whose origin and history have just been traced.

In the first place, some account of the monetary situation as it actually exists in Russia must be given. It will have been inferred from what has already been said that no metallic circulation is in use, and that the country has for many years been performing its business by means of paper. It is true that since the recent edict already mentioned it has been possible to express contracts in gold, and that since the ukase of 1896

[1] See RAFFALOVICH, *Marché Financier*, 1895–6, p. 300.

[2] For text see *Bulletin Russe de Statistique Financière*, July–August 1896, p. 463.

redemption has practically been established; but the first of these measures had of course no influence on the immediate monetary situation, while the redemption measures have not yet been of long enough standing to render possible a final judgment as to their effects. Conditions are not yet sufficiently stable to admit of the unrestricted use of a metallic currency, and although coinage has all along been considerable,[1] gold, the preponderating part of it, has, at least until very recently, been no more than a merchandise, the coins as soon as struck going into the treasury of the Bank of Russia to be shipped thence to Paris, London, and Berlin in payment of debts. Again, although silver, too, has been coined in considerable quantities, it, no more than gold, has formed part of the actual medium of exchange. What has been coined has been intended either for use in the eastern trade or to serve for the payment of debts specially contracted in terms of silver, and for the payment of which no other medium would suffice. The statement that no coin circulation could possibly have existed needs no explanation when the quotations of the notes and the state of the commercial

[1] COINAGE OF RUSSIA.

Year	Gold	Silver	Year	Gold	Silver
1865.....	20,077,285	6,148,268	1881.....	27,144,051	3,608,024
1866.....	20,069,600	3,356,028	1882.....	19,835,048	1,542,525
1867.....	18,040,070	5,482,608	1883.....	30,407,056	2,377,862
1868.....	17,000,015	4,800,081	1884.....	23,126,038	1,645,012
1869.....	19,929,024	5,300,965	1885.....	26,802,088	1,250,022
1870.....	25,600,040	5,400,011	1886.....	19,126,350	1,590,788
1871.....	4,600,024	6,120,502	1887.....	26,055,035	2,010,509
1872.....	12,300,024	4,500,006	1888.....	26,510,095	1,507,033
1873.....	15,231,024	5,201,009	1889.....	24,430,030	1,494,754
1874.....	24,810,024	4,976,006	1890.....	28,150,090	2,091,763
1875.....	20,300,024	5,100,006	1891.....	2,735,140	3,486,528
1876.....	30,189,040	6,017,011	1892.....		
1877.....	33,150,024	10,147,006	1893.....	3,000,120	3,239,018
1878.....	34,582,048	16,361,263	1894.....	3,000,105	403,007
1879.....	36,125,040	8,354,986	1895.....	50,000,560	5,704,054
1880.....	31,300,056	7,515,268			

1865–1891 from MAYER, *Münzwesen u. Edelmetallproduktion Russlands*, p. 56.
1893–1895 from *Bulletin Russe de Statistique etc.*, July–August 1896, pp. 460 *et seq.*

TABLE I.[1]

(In rubles—,000 omitted.)

	Total note issues	Treasury notes	Metallic stock of bank	Metallic stock of treas.	Notes in bank	Import of gold	Export of gold	Excess of imports	Excess of exports
1864	636,500								
1865	679,500								
1866	678,000								
1867	709,000								
1868	691,500								
1869	724,400								
1870	732,100								
1871	757,200					6,345	16,861		10,516
1872	772,900					8,111	6,649	1,462	
1873	771,000					2,500	14,309		11,809
1874	797,000					6,552	17,054		10,502
1875	797,300					1,721	27,576		225,855
1876	797,300					1,488	101,845		100,357
1877	790,000					9,403	13,592		4,189
1878	1,039,900					10,249	6,806	3,443	
1879	1,188,100					7,388	5,322	2,066	
1880	1,162,500					7,046	25,876		18,830
1881	1,133,515	216,000	183,063	108,049	48,464	5,371	66,925		61,554
1882	1,133,515	216,170	179,215	56,418	105,401	4,489	68,136		63,647
1883	1,133,515	216,000	179,215	37,480	160,333	3,014	19,212		16,198
1884	1,103,515	274,700	194,188	30,145	144,236	2,412	3,034		622
1885	1,073,515	239,997	191,717	81,469	173,754	2,489	5,336		2,847
1886	1,046,433	265,000	235,475	75,648	139,768	2,401	14,293		11,892
1887	1,046,433	240,000	240,597	40,949	105,409	2,191	18,890		16,699
1888	1,046,295	240,000	237,119	36,634	75,114	21,007	35,001		13,994
1889	1,046,295	240,000	250,058	47,052	73,150	2,688	17,451		14,763
1890	1,046,295	222,000	278,325	94,061	117,869	15,801	16,915		1,1114
1891	1,046,295	216,000	354,877	128,940	138,879	72,322	616	71,706	
1892	1,121,295	216,000	401,732	93,454	66,490	104,363	232	104,131	
1893	1,196,295	216,000	487,045	94,505	122,214	13,195	172	13,023	
1894	1,196,300	216,000	389,351	209,224	124,400				

[1] Figures taken from *Bulletin Russe de Statistique Financière*, 1894, pp. 400–401, etc.

balance—already so often mentioned—are considered. The unfavorable commercial balance prior to 1887 implied a similar excess of exports over imports of the precious metals. Until 1892 gold exports were nearly always in excess of gold imports.

Latterly this condition has been reversed, thanks partly to the improved balance of general trade, and partly to the slow increase in the amount of gold annually produced by Russia.[1] Had it not been for the large quantities of gold yielded by Russian and Siberian mines the difficulty of obtaining a stock of the metal might have been much greater. The stock of coin has been chiefly composed of the reserves of the Bank of Russia and of the treasury (both of which have, until recently, been very variable in amount) and of such small quantities as were to be found in other credit institutions. To these, of course, must be added whatever sums have been hoarded by the population at large. These, however, cannot have been great and are, in any event, quite beyond the reach of estimate.

The circulation, by which the actual work of exchange has been performed, has thus consisted almost exclusively of paper which, as already seen, has, since 1881, nominally amounted to more than 700 millions of rubles, but really to about 1100 millions. To these are sometimes erroneously added the temporary note issues of 1892, etc., which are equivalent to gold because guaranteed by a reserve of equal amount as well as the so-called *Schatzamt Scheine* or treasury notes (see Table I). These latter

[1] From *Bulletin Russe de Statistique Financière et de Législation*, No 1, January 1896, p. 83.

PRODUCTION OF GOLD IN RUSSIA.

1 pud = 40 Russian pounds = 16.3805 kg.

1885	1954 puds	1890	2288 puds
1886	1938 "	1891	2267 "
1887	2033 "	1892	2506 "
1888	2160 "	1893	2601 "
1889	2167 "	1894	2478 "

Note.—To these figures may be added the production of the imperial domain which was as follows (1883–1894), in puds: 101, 91, 61, 103, 95, 86, 106, 114, x, x, 133¼, 139½. Russia furnishes in all about one-sixth of the world's production of gold and about one-five-hundredth of its production of silver.

are nominally redeemed each year, but the operation is a mere farce, being effected by the issue of new notes in place of the old ones. Russia may thus be said to have been doing business during recent years on an inelastic note issue consisting of less than 1100 millions of rubles, the guaranteed notes being equivalent to gold, and hence not circulating freely.

Leaving quite out of account for the present the fact of depreciation and its various results, the disadvantages of a note issue like that just described are familiar, especially in the United States. The Russian paper currency has presented some analogies to our own greenback circulation. The disadvantages of a note issue which can neither be increased nor decreased as occasion demands are sufficiently well known to require little attention. The same periods of stringency and lack of adequate note circulation which have been repeatedly witnessed in the United States have been observed under similar circumstances in Russia. Many features of the general industrial and economic situation have been analogous. In both cases the existence of large grain-growing areas, widely separated but producing crops demanding large capital for their reaping and transportation at particular seasons of the year, has led to temporary constriction and temporary redundance. An inadequate credit system, unfamiliarity with the use of credit instruments, and a lack of metallic money have vastly intensified the general discomforts and inconveniences of the Russian situation. Moreover, it seems to have been overlooked that, despite the depreciation, and perhaps partly in consequence of it, the circulation does not seem to be, as is commonly supposed, redundant Looking merely at the actual volume of notes in circulation, equal nominally to about 880 million dollars, but in actual value to about two-thirds that amount, it is seen that the circulation can hardly be considered excessive. Both the United States and Germany have in circulation a volume of notes about 1.5 times as great as that maintained by Russia. France has three times as many. Austria-Hungary has an amount more than four-fifths as great. In short, the situation of Russia has been that

of a country possessing little or no coin or bullion, no metallic circulation, poor credit facilities, and a note issue inelastic, fluctuating in value, and usually inadequate.

Again, in studying the present outlook for the success of the new monetary reform it is necessary to note some facts which, although often neglected, are of prime importance in forming an opinion. If the notes are, as just maintained, not redundant, but rather the reverse, why have they so long been at a discount? If the value of a paper currency is governed solely by the *volume* of that currency issued as compared with "monetary needs," why have the Russian notes not stood above par as compared with gold in a country where metal is lacking, credit and credit instruments unfamiliar, "monetary needs" (if measured by the advance in trade and industry) increasing, but where the volume of notes has in recent years been scanty and inelastic? Further, the curious fact already noted that notes themselves redeemable in silver rose above the market value of the silver contained in the silver coins in which they were presumably redeemable, even while coinage was free, demands explanation A brief examination of the causes of these phenomena will materially assist a study of the contemporary conditions.

In recalling the history of the notes, and of the reserve fund supposed to be devoted to their redemption, the most important fact to be observed is that there appears to be little or no correspondence between their volume and their quotation, or between the latter and the amount of the reserve.

In the year 1858, before the bank reform, paper was quoted at 36 pence, and the volume of notes amounted to 730 millions of rubles. The coin circulation had greatly decreased, but silver rubles and 50-copeck pieces might still be found in the country districts, especially in the eastern provinces.[1] In 1862 the finance ministry found, with a quotation of about 35 pence, a reserve of 98 millions and a circulation of about 713 millions, the note circulation so nearly correspondent to the normal needs of the country that the redemption of the notes was thought of. This opera-

[1] *Russische Revue*, St. Petersburg, 1879, Bd. xiv. pp. 415 *et seq.*

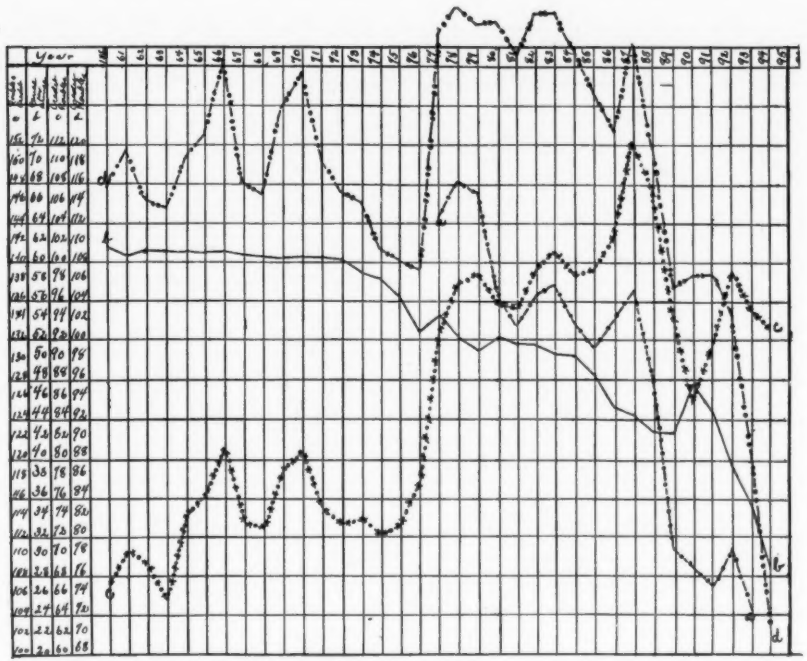
tion was begun in 1862. It set out with a quotation of 34⅝ (pence) and an issue of 713 millions. At the end of one and one-half years the notes had been reduced to 636 millions, the reserve fund from 97 to 68 millions, and the quotation instead of rising had fallen to 34½. The operation of purchasing gold begun in August 1868 raised the redemption fund in July 1875 to 229, and the volume of notes in circulation to 797 millions, while the average quotation remained in the neighborhood of 33. Another redemption operation undertaken in 1875 resulted in decreasing the quantity of notes to 635 millions (July 1, 1876), the redemption fund to 175 millions, and at the same time the quotation fell off to 31½. It would be idle to explain either of these variations by referring it to the others. During all this period no excess in the volume of money had been observed. It was not unusual to see payments in Moscow effected with coupons which would not fall due before the following year. Workmen were sometimes paid in a sort of time checks stamped on leather.[1]

Much the same lack of causal connection between these three sets of circumstances may be observed during the period lasting from the reform measures of 1881 to the cessation of the deficit in 1887.[2] It was shortly after the latter date that attention was called to the evident lack of relation between the price of the ruble (paper) and the silver contained in a silver ruble. These variations introduced new elements of difficulty into the study of a situation already complicated. This new feature of the market may be best studied by the graphic method, whereby the less comprehensible quotations may be presented in a form readily comparable with the statistics for the stock of metal, circulation of notes, etc., already given.[3] The data for the chart are found in the accompanying table.

The lines on the chart represent (*a*) the average price of 100 silver rubles in St. Petersburg; (*b*) the average value of silver in pence per ounce; (*c*) the equivalence of the sum of £10 expressed in Russian notes according to its value in exchange

[1] *Russische Revue*, St. Petersburg, 1879, Bd. xvi. p. 420.

[2] See Table I. [3] Table I.



Column *a* – average price of 100 silver rubles in St. Petersburg (measured in rubles).
" *b* – average price of silver in pence per ounce.
" *c* – equivalence of £ 10 expressed in rubles (credit) after the St. Petersburg–London quotations.
" *d* – average price in credit rubles of the actual silver contained in 100 silver rubles.

TABLE II.[1]

Year	1 Average price of silver in pence per oz.	2 Equivalence of £10 in notes London-St. P. quotation	3 Average value in notes of the silver contained in 100 silver rubles	4 Average value in notes of 100 silver rubles at St. Petersburg	5 Average quotation of 1 ruble gold, in notes	6 Average quotat'n of 1 ruble in notes, in gold	7 Average quotation of 1 ruble in silver, in notes	8 Average quotat'n of the ½ imperial
1860	61.68	67.15	107.96					
1861	60.81	70.42	111.61					
1862	61.43	69.12	106.51					
1863	61.19	65.68	105.81					
1864	61.19	74.09	118.51					
1865	61.06	76.05	121.03					
1866	61.13	80.99	129.02					
1867	60.56	73.66	116.27					
1868	60.50	73.01	115.12					
1869	60.43	78.66	123.90					
1870	60.56	80.67	127.33					
1871	60.56	74.93	118.27					
1872	60.25	73.35	115.18					
1873	59.25	73.98	114.24					
1874	58.31	72.05	109.50					
1875	56.75	73.24	108.33					
1876	53.05	77.82	107.55					
1877	54.71	92.30	131.19	144.40	1.48	.67	1.44	7.64
1878	52.55	97.96	134.16	148.14	1.55	.65	1.48	7.97
1879	51.32	98.97	132.38	147.33	1.58	.63	1.47	8.16
1880	52.21	95.73	132.62	136.73	1.55	.64	1.37	8.00
1881	51.83	95.28	129.12	133.44	1.52	.66	1.33	7.84
1882	51.72	99.21	133.73	136.58	1.58	.63	1.37	8.16
1883	50.75	101.18	133.83	137.80	1.62	.62	1.38	8.33
1884	50.63	98.46	129.92	133.78	1.58	.63	1.34	8.12
1885	48.48	99.21	125.35	131.32	1.58	.63	1.31	8.13
1886	45.34	102.74	121.41	126.51	1.65	.61	1.27	8.49
1887	44.61	112.15	130.39	137.10	1.80	.56	1.37	8.98
1888	42.71	107.49	119.65	127.68	1.68	.59	1.28	8.41
1889	42.64	94.57	105.10	110.67	1.52	.66	1.11	7.59
1890	47.71	85.82	106.71	109.08	1.38	.73	1.09	6.89
1891	44.93	91.25	106.85	107.06	1.50	.67	1.07	7.49
1892	39.58	99.07	102.20	110.82	1.59	.63	1.11	7.93
1893	35.33	95.22	87.68	104.38	1.53	.65	1.04	7.66
1894	28.80	93.02	69.82		1.48	.67		7.46

St. Petersburg, London, and (*d'*) the average price (in notes) of the bullion actually contained in 100 full-weight silver rubles. The line *bb* thus gives the norm for the whole chart, inasmuch as it represents the value in gold of a definite quantity (1 ounce)

[1] Figures taken from *Bulletin Russe de Statistique Financière*, St. Petersburg, 1894, pp. 134, 456, 520, etc.

of silver bullion ; *cc* and *dd* give the course of definite quantities of gold and silver expressed in terms of notes, inasmuch as, coinage being free in England, the exchange value of £10 may be regarded as that of a definite quantity of gold bullion on foreign markets. That is to say, *cc* expresses the variations in the quantity of notes required to import £10 into Russia. The foreign value of the credit ruble as a *government obligation* is thus given. The line *aa* renders possible a comparison between fluctuations in the value of the silver ruble as a coin with those in its bullion value. The former of these naturally follow the latter at a slight distance in point of time, the fluctuations thus falling upon the chart somewhat later.

There are several points to be especially noticed in considering this chart. A comparison of the line representing the value of the credit ruble with the course of the figures already given in Table I illustrates the statement already made that no connection between the price of the paper and the volume of the notes in circulation or the height of the gold reserve is traceable. Secondly, there is evidently no correspondence between the course of the line *cc* and the other lines on the chart. While variations in *aa*, *bb*, and *dd* by no means coincide or are contemporaneous, these three lines at least preserve the same direction, although their movements are not identical. The line *cc*, it will be remembered, represents what may be considered the real or true value of the Russian paper, *i. e.*, its actual exchange value upon the principal market of the world as governed by the real influences affecting that value as measured in gold, the world's medium of exchange, and unaffected by factitious circumstances. Its only apparent correspondence to the other lines occurs at particular points when influences depressing to Russian credit happened to coincide with circumstances tending likewise to push the other lines downward. There is still another point of particular interest to be noted. The lines *cc* and *dd* are seen to move at first convergently; later divergently. The line representing the value of silver as expressed in notes falls. This rise in the price of a paper obligation above the course of the metal

in which it was quoted, although in itself a curious phenomenon, is only an interesting additional proof of the fact that a government obligation, whether a note or not, depends for its value far more on general public credit than upon the existence of some fund supposed to be devoted to its liquidation. A similar case occurred in Austria where likewise the government notes, though nominally redeemable in silver, rose along with other obligations above par (in silver) when it became clear that an honest redemption policy was intended. In either case the phenomenon, though peculiar, is simple and is probably to be observed only when a paper currency has become so firmly established in the habit that it becomes dissociated in the public mind from the mere metallic currency.

It would be quite supererogatory to enter upon a discussion of the principles of paper money in a purely descriptive study. Before proceeding, then, to consider the immediate outlook it needs only to be recalled once more that in the case of Russia, as in that of all other nations, the value of fiduciary currency depends not upon its *volume* but upon the estimate placed by the public upon its future worth. This, although merely stating the problem of its value in other terms, tells us at once where to look for the ultimate elements. It is clear that the price of public obligations depends upon a variety of influences—political, economic, industrial, and, incidentally, administrative. Of these the first category may be eliminated, since it is only through their effect upon the economic situation that politics will be effective. The prospect of success, then, in maintaining a high quotation of the notes and so making effective the steps already taken toward their redemption must be judged primarily by the general economic and fiscal outlook. In this must be considered the balance of foreign trade, the immediate prospects of production and exportation[1] of commodities, as well as the probability of being able to maintain an adequate reserve without excessive sacrifice.

These considerations are of too great extent to receive detailed attention here. We have already pointed out the

[1] Compare *Deutsche Oekonomist*, Berlin, 1896, p. 253.

growth of the Russian trade in cereals and the fact that the improved condition of the finances warrants the hope of a continuance of favorable fiscal conditions. Exports and growth of cereals are rapidly increasing of late, and the new industrial strength, although less marked than the advance in agriculture, is steady.[1] A consideration of the general commercial balance of trade for the past three years, prior to 1896, shows a state of things highly favorable to the success of the new measures.

The same must be said, if we compare the amounts realized upon government loans during recent years.[2] The rise in the price

[1] TOTAL EXPORTS AND IMPORTS OF RUSSIA, 1893–1895.

(In credit rubles —,000 omitted.)

	Exports			Imports		
	1895	1894	1893	1895	1894	1893
Food stuffs.....	385,647	428,437	332,390	67,652	66,197	72,985
Raw materials.....	260,044	201,674	226,149	282,373	314,164	259,027
Animals	15,138	12,179	12,777	2,883	2,734	1,337
Manufactures	30,201	21,966	23,352	136,493	131,841	88,607
Total.....	691,030	664,256	594,668	489,401	515,236	421,956
Gold and silver (coin and bars)..	42	37,446	64	36,561	130,396	28,745

[2] AMOUNTS REALIZED UPON GOVERNMENT LOANS.

Metallic loans negotiated Dec. 1, 1888 to Dec. 31, 1895 (Proceeds devoted to department of state loans)	Nominal value of loans (in rubles)	Net amount credited to the treasury by the syndicates of issue (in rubles)
Consol railway loan, 1st and 2d series.....	1,941,992,000	1,711,945,390
4 per cent. loan of 1889, 2d issue.....	500,000,000	417,588,561
4 " gold loan of 1890, 2d issue.....	360,000,000	327,657,471
4 " gold loan of 1890, 3d issue.....	300,000,000	273,132,600
4 " railway loan, 3d series.....	320,000,000	304,821,025
3 " gold loan of 1891.....	500,000,000	383,982,857
4 " gold loan of 1893, 5th issue.....	168,254,175	168,254,175
3½ " gold loan of 1894.....	400,000,000	368,694,057
4 " gold loan of 1890,* 4th issue.....	41,764,000	39,258,151

*See Movs, *Finanzen Russlands*, p. 8 (Berlin, 1896).

of government securities shown by the figures is quite noteworthy and justifies the expectation of a further rise in the price of the paper should it be decided to redeem at a figure higher than that which has now been fixed. Refunding has been a principal feature of recent Russian finance[1] and its results have been highly satisfactory.

After this summary of the remoter aspects of the situation, we may make a brief survey of the conditions immediately obtaining in the treasury and bank. For this, the latest authentic information available seems to be that found in the last report of M. de Witte[2] on the preliminary budget of 1897. According to this document, the situation may be stated as follows:

Date	Note issue	Gold reserve, 1 ruble gold = 1½ rubles credit	Per cent. of gold reserve to note issue	Reserve fund, 1 ruble gold = 1½ rubles credit	Per cent. of reserve fund to note issue
Jan. 1, 1887	1046.5	441.6	42.2	253.5	24.4
Aug. 30, 1892	1171.3	905.5	77.3	503.1	42.9
Dec. 8, 1896	1121.3	1199.2	106.9	750.0	66.9

The early history of the gold reserve has been recapitulated at another point. It was increased under Wiesnygradsky (January 1, 1887–August 30, 1892) by 309 millions. M. de Witte added 200 millions gold before December 16, 1896. The sources of the accumulation require no discussion. As already seen, a surplus existed under Wiesnygradsky. During the last year a gold loan whose product was 100 millions was used for the reimbursement to the bank of a part of the non-interest-bearing debt of the treasury. The collection of gold, however, has not disturbed foreign markets. In 1890 the bank was able to offer its assistance to the Bank of England to the extent of 1.5 million pounds, so that the reverse has been true. During the past year the redemption of notes and deposit of gold have been nearly equal, there being a difference of but 25 millions — which are said to

[1] *Cf. Le Rentier*, Paris, January 27, 1897.

[2] *Rapport du Ministre des Finances*, etc., *ante cit.* Number for December 1896.

be now in circulation.[1] During 1895 and 1896 175 million francs of silver have been purchased by Russia, and of this 43 millions have been coined and put into circulation.

From whatever point of view we examine the reform, then, it seems to rest upon a sound basis. Economic and fiscal prospects seem favorable, the stock of gold already accumulated is at least not inadequate, although only in part specifically devoted to securing the notes.[2] Judged by any fair standard, this, the latest of the great monetary operations of recent years, seems to have been conducted in a creditable manner and to hold out good hopes of success.

H. PARKER WILLIS.

BERLIN.

[1] *Rapport du Ministre des Finances*, etc., *ante cit.*, number for December 1896; or see for the same document, *St. Petersburger Zeitung*, *Beiblatt I*, January 1–13, 1897, pp. 171–3.

[2] But for some adverse criticism see *London Economist*, January 16, 1897, p. 76, etc.

THE FALL IN THE PRICE OF SILVER SINCE 1873.

THE current price of silver is the exchange ratio between silver and gold, and will change from causes affecting either of its terms. A complete study of the price of silver should therefore properly include some mention of the gold side of its price ratio. The limits of the present article prevent, however, such a study of gold. We shall first examine the price of silver from the standpoint of silver, and only if no satisfactory explanation of its movement can thus be found resort must be had to the agency of gold in producing the price movement.

I. THE DEMAND FOR SILVER.

The money demand for silver has greatly declined within recent years. This is due to the general closing of the mints of the world to its free coinage; and to its reduction to the position of token money.[1]

We cannot ascertain with any exactness the strength of the demand from the arts. It has probably been stimulated by the increasing cheapness of silver; but there is no evidence that it has increased sufficiently to offset the decreased demand for coinage purposes.

[1] This weakening of demand is shown in the following table, taken from the *Report of the Director of the Mint* for 1896. It will be observed that the world's coinage bears a decreasing ratio to the yearly production of silver.

Year	Production of silver, in fine ounces	World's coinage of silver, in fine ounces
1888.....	108,827,606	104,354,000
1889.....	120,213,611	107,788,256
1890.....	126,095,062	117,789,228
1891.....	137,170,119	106,962,049
1892.....	153,151,762	120,282,947
1893.....	165,472,621	106,697,783
1894.....	164,610,394	87,472,523
1895..... ...	168,308,353	94,057,903

The Indian demand next claims our attention. India and the East annually absorb large quantities of silver, most of which is hoarded by the natives.[1] If these importations of silver increased to any large extent the monetary circulation of these countries, the favorable balance of trade which has caused the movement would be quickly corrected by a rise of prices. Such, however, is not the case. Even in times of famine a relatively small amount of silver is sold.[2] Of recent years these Indian importations have seriously declined, when compared with the fall in the price. When larger quantities have been taken the increase has not been at all proportional to the downward movement of the price of silver. The Indian demand has gradually weakened.[3]

Some influence in causing this decreased demand must be ascribed to the Council Bills. These are bills of exchange, drawn by the Indian council in London upon the Indian treasury. They are the evidences of debt due to England from India, and are sold to Indian importers who are thus saved the trouble of purchasing and shipping silver to meet their obligations. These council bills thus compete with silver as a means of payment to India. Of recent years this competition has become serious, the average yearly amount of bills sold in the London market having increased from $57,762,790 in the period 1873–1877 to an average of $74,476,166 in the period 1891–1895.[4] The influ-

[1] (*a*) See evidence of Barbour before the Royal Gold and Silver Commission, *First Report*, questions 1095 *et seq.*, and Appendix V, A to D.

(*b*) See also ELLSTAETTER, *Indian Silver Currency* (Laughlin's translation), pp. 8, 9, and 14: "Of the silver thus absorbed, it is certain that only a small part remains in circulation."

[2] ELLSTAETTER, p. 16: " . . . . from 1877 to 1880, famine years, Rx. 4.5 millions of silver ornaments came to the mints of Bombay and Calcutta."

[3] From 1873 to 1877 India imported an average amount of silver of $26,167,066 (taking the rupee at its coinage value) at an average price of 21.49 pence per rupee; from 1885 to 1889 $33,468,359 of silver on the average was imported at a rupee price of 17.10 pence; and from 1891 to 1895 the average import of silver amounted to $29.-036,171 at a rupee price of 14.6 pence.—*Report of the Director of the Mint*, 1896.

[4] *Report of the Director of the Mint*, 1896. Estimated on the basis of the coining value of the rupee.

ence of the council bills in decreasing the demand for silver may easily be overestimated, since they represent in large measure investments of English capital in public works which have largely increased the productive power of India. These investments of capital have thus, to some extent, furnished the means for their own repayment. A point not generally noted is the effect of the manner of sale of these council bills upon the silver market. They are generally put into the market as they become due, without regard to the price of silver or to the needs of exchange, and are sold for what they will bring, thus exerting a most depressing influence upon the market.[1] We may conclude that the Indian demand has been seriously weakened, but that other forces beside the council bills have been active in causing its decline.

Finally, the demand for silver has been progressively inelastic. This is seen (1) from the increasing frequency and extent of its price fluctuations; and (2) from the weakened continental demands which were strong and constant prior to 1873. Since that time Europe has habitually purchased on a declining market, and has ceased buying when for any reason the price has risen.[2]

To summarize our discussion of the demand for silver: we find (1) that the proportion of the yearly supply entering the world's currencies has constantly declined; (2) that there is no evidence of an increased demand from the arts sufficient to offset the decreased demand for coinage; (3) that the Indian demand has been seriously weakened; and (4) that the world's demand for silver has been progressively inelastic.

In passing to the discussion of the supply of silver, we

[1] *London Economist*, February 18, 1882, and February 24, 1883.

[2] Purchases of European countries, showing that these coincided with the periods of depression in the silver market:

(*a*) Portugal, 1876, 1878, 1887, 1892 (*United States Treasury Report*, 1895, p. 349).
(*b*) Italy, 1893, 1894 (*ibid.*).
(*c*) Netherlands, 1891, 1894 (*ibid.*, p. 352).
(*d*) Spain, 1877–1879, 1886, 1891, 1893–4 (*ibid.*, p. 348).
(*e*) Russia, 1891–2 (*ibid.*, p. 352).

should note that the generally accepted theory of the value of the precious metals has considered the total stock in existence as the supplies, upon which new demand influences must operate in order to affect their values. The effective regulation of these supplies has been excluded from the domain of cost of production in consequence.[1]

In its application to silver, some modification of this theory is necessary. Only that portion of a commodity can affect its price which is either actually, or, in the opinion of the dealers, potentially, within the market looking for purchasers. On this understanding of supply, we must exclude from the marketable stock of silver (1) most of the silver which has entered the arts, since this will be put on the market in relatively insignificant amounts; and (2) that portion of the world's silver money which is sustained at a face value above its bullion value by a process of direct or indirect redemption. If these limitations be accepted in full, the available supply of silver must be restricted to an amount but slightly in excess of its yearly production.[2] In this case it is upon this relatively small amount that new demand influences must operate. But when we examine more closely this latter principle in its applicability to the conditions prevailing in the silver market since 1871, it is by no means to be accepted as thus absolutely stated. During the greater part of this period, certain peculiar circumstances affecting silver compel us, to some extent, to resort to the old view of the supply, in order to understand its influence upon the price.

[1] So, *e. g.*, J. S. MILL, *Principles*, bk. iii. chap. vi. § 2.

[2] The *Report of the Director of the Mint* (1895, pp. 39–41) shows the stock of silver money in those countries which at that time admitted silver to free coinage and full legal-tender privileges to be $1,015,000,000; those with limited tender and restricted coinage, $3,085,500,000. From the first amount should be substracted (1) the silver of China amounting to 750 million dollars; and (2) that of Japan, amounting to 72 million dollars. The silver of China is exceedingly immobile, and Japan has only recently adopted the gold standard. The remaining silver-standard countries are India, the Straits Settlements, Mexico, and South and Central America. When the small use of credit and the consequent large use of money in these countries is considered, the probability of any large part of their silver entering the market is seen to be slight.

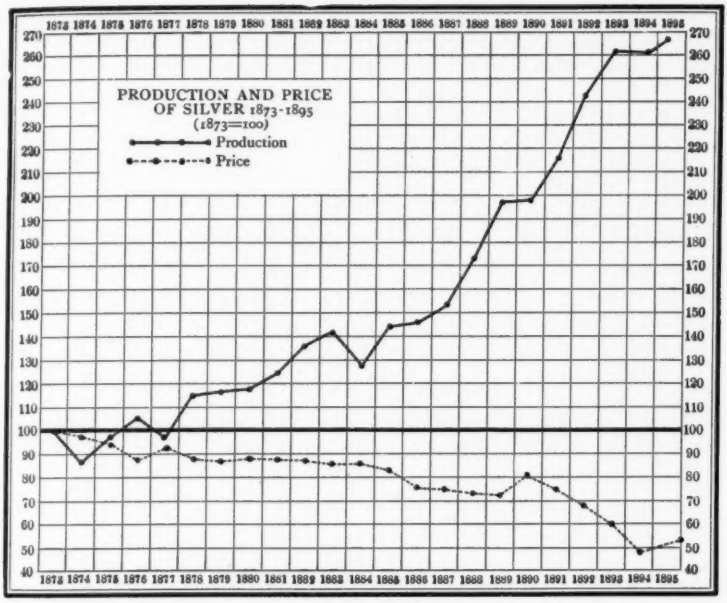
The fear has been constantly present in the silver market that some of those nations holding large amounts of silver tokens would throw these stocks upon the market. This apprehension was particularly strong in the case of Germany. A general ignorance existed during the period of the sales of silver by this government as to the amount of silver which it intended to dispose of. This was evidenced in the depressing influence which the actual sales exercised upon the price, an influence out of proportion to their actual extent, and also by the quick recovery which followed Bismarck's announcement in 1879 that the German sales would be suspended.[1] It was feared at one time that the dissolution of the Latin Monetary Union would throw a large quantity of silver on the market.[2] At a later date the Austrian silver has given trouble;[3] and only recently, the action of Japan in adopting the gold standard has depressed the silver market, because it was feared that Japan might sell her silver.[4] It is true that these fears have not to any extent been realized; but they have exercised considerable influence upon the silver market notwithstanding, and should be reckoned with in a discussion of the supply of silver. In estimating this available supply, we must therefore take account not only of the yearly production, but of that large quantity of token silver which has, for so many years, threatened the market. Keeping this fact in mind, reference should now be made to the accompanying chart which shows the relative movements of the production and price of silver from 1873 to 1895. The production has increased 266 per cent., and this, as we have seen, does not represent the actual

[1] *Report of the Royal Commission*, 1888, p. 146, evidence of Paul Tidman: "Because . . . . there had been thrown upon the market the quantity of German silver with the prospect of more to follow." *Ibid.*: "But you had a large amount of silver held *in terrorem* over the market by Germany." See also *London Economist*, January 10, 1874, March 13, 1875, and March 9, 1878; and *London Standard*, December, 1879.

[2] *London Economist*, September 12, 1885, ". . . . apprehension as to the future of silver . . . . which has recently been revived and intensified . . . . by the threatened disruption of the Latin Monetary Union." See also *ibid.*, September 19, 1885.

[3] VON WIESER in this JOURNAL, vol. i. p. 404, June 1893.

[4] *London Economist*, March 20, 1897.



PRODUCTION AND PRICE OF SILVER, 1873 TO 1895.

(*Report of the Director of the Mint*, 1896.)

Year	Production, fine ounces	Per cent.	Price of silver per ounce in pence	Per cent.
1873	63,267,187	100	59 1/4	100
1874	55,300,781	87.5	58 5/16	98.4
1875	62,261,719	98.3	56 7/8	96
1876	67,753,125	107	52 3/4	89
1877	62,679,916	99	54 11/16	92.5
1878	73,385,451	116	52 9/16	88.7
1879	74,383,495	117.5	51 1/4	86.5
1880	74,795,273	118.2	52 1/4	88.2
1881	79,020,872	124.7	51 11/16	87.6
1882	86,472,091	136.6	51 5/8	87.5
1883	89,175,023	140.9	50 9/16	85.5
1884	81,567,801	128.9	50 5/8	85.7
1885	91,609,959	144.7	48 5/8	82.6
1886	93,297,290	147.4	45 3/8	76.6
1887	96,123,586	151.9	44 5/8	75.3
1888	108,827,606	172	42 7/8	72.4
1889	120,213,611	198.8	42 11/16	72.1
1890	126,095,062	199.3	47 11/16	72
1891	137,170,919	216.9	45 1/16	80.6
1892	153,151,762	242	39 3/16	76.1
1893	165,472,621	262.5	35 5/8	67.4
1894	164,610,394	260.4	28 5/16	60.2
1895	168,308,353	266	29 7/8	48.9

increase in the available supply of silver. The price has fallen 98 per cent.

We have seen that the demand for silver has declined since 1873. If this fact be taken in connection with the increase in supply, the fall in the price of silver is adequately explained. A careful study of the influences affecting gold might assign to it some influence in depressing the price of silver; but from the relative movements of the supply and demand of silver itself, this influence of gold would plainly be insignificant, even if it has not, by increasing in quantity, to some extent prevented a greater fall in silver than that which has actually taken place.

II.

THE COST OF PRODUCTION OF SILVER.

This increase in the supply of silver at the same time that its price was falling proves either (1) that its cost of production has been greatly lessened, or (2) that its price was originally so far above the cost of production that in its decline it has not yet reached a point where cost can regulate supply.

It is impossible accurately to estimate the average cost of production of silver. It is produced by all grades of mining operators; much of it is found in connection with gold, lead, and copper, thus assuming the character of a by-product; the yield of different mines varies widely; and that of the same mine from year to year. In our discussion of the cost of production of silver we must be content to trace the general progress of the silver industry, noting a few of the most important improvements both in methods and machinery.

(1) The first and most important improvement in silver production has been the improvement in transportation. Railroads have been rapidly extended throughout the western part of the United States,[1] and of recent years into Mexico. The building of these latter roads has made possible the importation of silver ores from Mexico into the United States, which greatly stimu-

[1] From *Poor's Manual*, 1895, table showing extension of railroads in the principal mining states of the United States:

lated the silver industry of the former country.[1] Railroad transportation enables the shipping of fuel and timber, frequently scanty in the richest mining localities; and also the introduction of the improved machinery, without which, except in the richest deposits, silver mining cannot today succeed. Transportation facilities also make it possible to utilize lead as a by-product of silver, which materially decreases the cost of silver production. Difficulties of transportation have seriously retarded the progress of silver mining in Bolivia. A railway has, however, recently been in process of construction in that country which will open some of the richest mines. This railway now rises more than 4000 feet to the mines of Huanchaca and Oruco, and will be extended farther.[2] Steamers now run on Lake Titacaca. By means of these transportation facilities many of the Bolivian mines have been equipped with improved machinery, and have largely increased their output.[3] When it is known that, until recently, in Bolivia, most of the ore and supplies were transported on men's backs, or on the backs of llamas; and that, in many localities, the dried dung of the llama was the only fuel, the influence of transportation facilities upon the future of South American mining industry can be comprehended.[4]

One of the most interesting improvements in mining is the "rope haul," which is in use in many mining localities situated near the seaboard, in the transportation of ore to the

TABLE SHOWING EXTENSION OF RAILROADS IN THE UNITED STATES.

States	1860	1870	1880	1890
California	23	925	2,195	4,328.03
Nevada	..	593	739	923
Arizona	..	...	349	1,094.81
Utah	..	257	842	1,265

[1] ROTHWELL, *Mineral Industries*, 1894, pp. 284, 285.

[2] *Report of the Director of the Mint on the Production of the Precious Metals*, 1894, p. 218. *German Monetary Commission*, 17th–20th sessions, p. 84. ROTHWELL, *Mineral Industries*, 1894, p. 285.

[3] Production of Bolivia 384,985 kilos in 1885, 21,999,966 oz. in 1894.—*Report of Director of the Mint*, 1886 and 1895.

[4] *Report of German Monetary Commission*, pp. 82–4.

coast. This consists of a continuous wire rope, running over drums at either end of the line, to which the ore buckets are attached. This appliance is usually operated by steam power, but in some localities, where the fall in grade is constant, the force of gravity has been found sufficient—the loaded buckets in their descent carrying the empty ones back to the point of loading.

Next in importance to the improvements in transportation come those in the mechanical and chemical processes of mining and extraction of ore. We may divide these as follows: improvements in extracting and dressing the ore, and improvements in methods of treatment.

Under the first, the steam, and later the electric hoist, has been substituted for the handwindlass.[1] Immense improvements have been made in the construction of concentrators. The old method of concentration, which is still in use in Mexico, and at some mines in the United States, was that of hand picking. The ore was spread out in a yard, and broken several times by hand; after each breaking being carefully sorted by women and children, who throw out the worthless material. The latest concentrator consists of a broad rubber belt revolving in an inclined trough. As the crushed ores are fed to the upper part with a stream of water, the lighter waste is washed down, while, the belt, also receiving a constant series of sharp lateral impulses carries the ore up the trough into the receiver. The latest form of this machine is capable of treating from ten to fifteen tons of ore per day.

The improvements in sampling ores have been even more striking. The object of sampling is to ascertain with approximate exactness the number of ounces per ton which the ore contains. The old method of sampling was to spread the ore in a layer, stretch a tape across it, and select pieces of ore at each foot mark. A pile was then made of this selected ore, which was carefully shoveled over several times, and then quartered; three

[1] Information obtained from Fraser and Chalmers, Manufacturers of Mining Machinery, Chicago, Ill.

pieces being thrown into one pile, and one into another. The smaller pile was run through a crusher and the crushed ore was made into a conical pile and again quartered, the opposite quarters being saved. This process was several times repeated, the ore being more finely reduced at each stage, till it was finally ready for the assayer.[1] Contrast this with one of the later samplers. A number of funnels of varying diameters are superimposed one upon the other, space being left between them for the ore to pass freely from the top of the series to the bottom. These funnels are kept revolving by machinery in such a manner that a certain proportion of the ore, which is constantly fed into the mouth of the upper funnel, will pass through openings in their sides at each revolution. The main bulk of the ore goes back to the sheds, while that which has been extracted is again put through the sampler, and is then ready for the assay office. The entire process is automatic.[2]

Great improvements have also been made in ore crushing. For the bowlder-crusher of Bolivia and Mexico,[3] has been substituted the battery of stamps and the rolls, and both of these have undergone a long series of improvements which space does not allow me to enumerate.[4] A large amount of labor has been saved by the manner of construction of the smelting works. "All refining works are now built in terrace form, and are so arranged that the base bullion, which has necessarily to be handled while being unloaded, sampled, and charged into the softening furnace, shall run from one furnace to another and not be lifted again until it is loaded."[5]

[1] *Transactions of the American Institute of Mining Engineers*, vol. xx. p. 155 (June 1891). Many of the old processes herein described are still in use, but they are rapidly being superseded by the more improved appliances.

[2] *Ibid.*, vol. xxii. p. 321 (August 1893).

[3] "A large bowlder with a short pole lashed to the top with rawhide, to serve as a lever in rocking it with a pump-handle motion back and forth through the segment of a circle of about five feet in diameter, over a flat bed stone upon which the metal is thrown so as to be caught under the rocking bowlder."—*Report of the Director of the Mint on Production of Gold and Silver in the United States*, 1891, p. 97.

[4] *Transactions A. I. M. E.*, vol. xiv. p. 497.

[5] ROTHWELL, *Mineral Industries*, 1892, p. 325.

In the smelting proper improvement has been even more active than in the preliminary operations. Those ores which contain sulphur in any considerable quantities require generally to be roasted in order to expel the sulphur before being thrown into the furnace. In former times these ores were roasted in heaps in the open air. Simple furnaces were next introduced, but it was found that even with this improvement success in roasting depended altogether on the care and skill of the man in charge, and many accidents were constantly occurring. This necessitated the construction of improved furnaces which require little or no skill on the part of the operator.[1] Much silver was formerly lost in the dust of the furnace. This difficulty has been overcome by special dust chambers with auxiliary flues, in which the roasting goes on uninterruptedly, all the ore which was formerly wasted being thus saved and immediately utilized.[2] In the treatment of "dry" silver ores, which are amalgamated with quicksilver and retorted, the chief improvement of recent years has been in the saving of quicksilver. Much of this was formerly wasted, the ground under some of the old smelting works being literally saturated with mercury. Strainers have now been introduced which separate the quicksilver from the amalgam. Mercury elevators, which are series of cups on endless chains, are then employed to raise the metal to the receiving tanks.[3] Coincidently with this saving of quicksilver has come a great fall in its price, which has declined from $80.32 per flask in 1873 to $38.80 in 1892.[4] Marked advances have also been made in the construction of amalgamating pans and settlers. The methods employed in extracting high-grade ores present a marked contrast to the patio process, which is still in vogue in Mexico. Here the ore is broken up, usually by hand, and is

[1] EGGLESTON, *Metallurgy of Silver, Gold, and Mercury in the United States*, p. 227: "The whole operation is under control from beginning to end, and the whole work of roasting the ore, (1) introducing, (2) drying, and (3) carrying it off, is entirely automatic."

[2] *Ibid.*, p. 228.

[3] EISSLER, *Metallurgy of Lead*, pp. 158, 159.

[4] ROTHWELL, *Mineral Industries*, 1892, p. 409.

then ground in what is known as an "arrastre," shaped like a horizontal waterwheel, in which heavy stones are used to do the grinding, and which is worked by mule power. In this the ore is mixed with water and ground to a pulp. It is then placed in what is known as the patio, a large basin usually with several hundred square feet of surface, where it is left for the water to evaporate until the mass is of the consistency of brick clay. Salt is then added, and the mass is thoroughly tramped by mules, after which quicksilver is added. After another treading a hot solution of sulphate of copper is added. Several more treadings follow. The mass is then washed by being run through a settler, inside which two men keep it in constant motion by treading. The amalgam, when washed, is put into iron flasks and heated to free it from the mercury. The silver comes out in the shape of spongy bars. The cost of working is very great. At one mill, where the ore averaged $60 per ton in Mexican silver, the average cost of working was $27.58, which does not include the wages of superintendence and interest. The method is evidently both expensive and tedious. Large amounts of ore, quicksilver, and amalgam are lost in the frequent handlings, which afford excellent opportunities for pilfering. Large quantities of tailings are collected, which must be concentrated and shipped. Another disadvantage is the time required. The process usually occupies not less than four weeks[1] and the interest loss is very considerable.

The methods of extraction of high-grade silver in vogue in the United States, and in the best mills throughout the world, may be summarized as follows: The ore is hauled to the mill, is sifted and sorted by machinery, crushed by heavy stamping batteries with a capacity of five tons to the head, or by the rolls, after which it is carried directly to the amalgamating pans, in which it is kept constantly in motion by machinery, passing through the eight pans in four hours. From these the pulp

[1] This description of the patio process is taken from a paper by Richard Chism found in *Transactions A. I. M. E.*, vol. xi. pp. 61–78. At this time silver was worth 51⅝ pence per ounce.

passes into settlers, which clean up the charge of 1000 pounds in four hours more. The mass is then retorted. The average cost for an average mill in Arizona was from $3.12 to $4.90 per ton of ore.[1]

The remaining processes of silver reduction may be divided into: (1) the group of leaching processes for low-grade ores; and (2) the smelting processes for galena and zinc-lead ores. Of the first the Russell process may be taken as a fair example. This was introduced about 1884. The essence of this process is to get the silver into a soluble state and dissolve it out with water. This is accomplished by the conversion of the silver into silver chloride by roasting with salt, and by the treatment of this chloride with a solution of hypo-sulphide of soda or lime. This process has proved particularly successful with low-grade ores which could not be treated by the old methods.[2] Another problem which has until recently baffled the silver producer has been the profitable reduction of zinc-lead ores. As late as 1892 it was impossible to reduce these profitably by the ordinary methods of smelting.[3] The zinc volatilized at a high temperature, rising to the top of the furnace and choking the mouth. These ores contain considerable quantities of silver, and constant efforts have been made toward their utilization. Only recently have these experiments been successful. Several methods are now in vogue. One of the best is that introduced by Mr. Ashcroft, a young English mining engineer, at Cockle Creek, Australia.[4] This is called the electrolytic process. The zinc-lead sulphide is made the anode of an electrolytic bath containing an acid element. The metals then enter into solution, and pass over to the cathode, while the sulphur is left behind. By properly regulating the current it has been found possible to separate the zinc by itself, thus getting rid of this troublesome element.

The improvements in lead-silver extraction have been perhaps more notable than any others. Prior to 1874 these ores

[1] *Transactions A. I. M. E.*, vol. xi. pp. 91–106. The cost is in gold.

[2] *Ibid.*, vol. xiii. p. 47. C. A. STETEFELDT.

[3] ROTHWELL, *Mineral Industries*, 1892, p. 316.

[4] *Australian Mining Record*, January 1897.

were reduced by amalgamation, as ordinary dry ores. About that time it was discovered that this silver could be far more easily extracted by a process of smelting. Following this discovery came the great development of Leadville and Pueblo in the early eighties. The essentials of this method of extraction are: (1) the smelting of the ore in an ordinary blast furnace; (2) the concentration of the silver into a much smaller quantity of lead; (3) the separation of the silver in a cupelling furnace.

The blast furnace has been greatly improved during the last twenty-five years. With the new era of lead smelting began careful investigations into the composition of the slag, and smelting was put on a scientific basis. Water-cooled jackets were soon substituted for fire-brick, and the life of the furnace was thus greatly prolonged.[1] Many improvements have been made in the furnace appliances, chief among which is the Arent syphon-tap, which allows the molten lead containing the silver to float away from the mass and be ladled out into the carriers, instead of flowing out as was formerly the case.

Marked improvements have taken place in the concentration processes. By the old method, the molten lead was placed in a number of kettles and allowed gradually to cool, the silver-lead alloys, which crystallized during the process, being dipped out by hand. This operation required much time and labor, and was correspondingly expensive. The present practice is to mix zinc with the molten lead, which takes up a large part of the silver, rises to the surface, is then skimmed off, and the zinc distilled out. The lead, containing the remainder of the silver, is finally placed on the floor of the cupelling furnace, a circular structure with a dome shaped roof and provided with a tuyere for the application of a hot blast, and an outlet opposite the tuyere opening. When the blast is applied, the lead is oxidized and blown through the outlet in the form of litharge, leaving the silver on the floor of the furnace, which is built on trucks apart from the main body of the structure. This construction enables the entire floor to be drawn out with the silver. The

[1] ROTHWELL, *Mineral Industries*, 1892, pp. 322, 323, 324.

old method was to take off the top of the furnace in order to get at the silver. Other improvements in the cupelling furnace have been in the application and nature of the blast.[1]

An important feature of the general improvement in the silver industry has been the rapid introduction of electricity into mining operations. The use of the electric light has greatly facilitated all processes carried on within the mine. Electric power is also employed in hoisting ore, and in pumping, with the very best results both as regards cost and convenience.[2] Electricity can be transmitted long distances with only a small loss of power; and it is thus possible to use power at such a distance from its source as would render it otherwise unavailable.[3] The importance of this improvement can be better realized when we consider that one of the greatest obstacles which mining, especially in Mexico, has to encounter is the difficulty of obtaining fuel for power owing both to the lack of transportation facilities, and, where these exist, to the high charges for hauling coal from the United States. By the introduction of electricity, this problem is, in large measure, solved. Where water-power exists within a radius of fifty miles, it can be used for the transmission of electric power to a silver mine. The economy of power is very remarkable.[4] At one set of mines in Mexico, those operated by the Real Del Monte works, electric power is obtained from Regla Falls, and transmitted from fifteen to twenty-five miles to work pumps, hoists, stamp-mills, crushers, and ventilators.[5]

It is obvious that the results of this long series of improvements in silver mining and silver smelting have been greatly to lower the cost of producing silver. These improvements have

[1] ROTHWELL, *Mineral Industries*, 1892, p. 327 *ibid.*, 321. "In the early days of lead smelling, ores containing less than $100 per ton of silver could not be worked with profit. The methods employed were so imperfect that losses of 40 per cent. of lead, and 30 per cent. of silver were not uncommon."

[2] *Engineering Magazine*, April 1897.

[3] *Transactions A. I. M. E.*, vol. xx. p. 316.

[4] ROTHWELL, *Mineral Industries*, 1894, p. 669; *cf.* also *Engineering Magazine*, April 1897.

[5] ROTHWELL, *ibid.*, 1895, p. 789.

doubtless, to some extent, been accelerated by the falling price of silver, which they have also tended to produce.[1] It was not to be expected that the great advances which have characterized every other department of industry would not affect the production of silver, and it should be remembered that there is no reason to believe that this march of improvement will be stayed. To take but one illustration: If the experiments in the utilization of the direct heat of the sun are ever successful the smelting of all kinds of ores will be completely revolutionized. The problem of fuel will have been solved.

[1] All appliances for the receiving, sampling, and general handling of materials (ore, fluxes, fuels, intermediary or finished products) are now of such a character as to reduce labor and time about one-half. It may be said that while ten years ago it took two men to smelt a ton of ore, one man is sufficient for the purpose now.—ROTHWELL, 1891, p. 321.

TABLE SHOWING IMPROVEMENT IN SMELTING INDUSTRY.

Place	Year	Contents in silver per ton	Percentage of total value returned to miner
		Oz.	Per cent.
Black Hawk	1871	100	65
	1872	100	65
	1873	100	65.5
	1874	100	53.6
	1875	100	60
	1876	100	67.2
	1877	100	64.3
	1878	100	65
Argo	1879	100	70
	1880	100	74
	1881	100	74
	1882	100	76
	1883	100	76.8
	1884	100	81
	1885	100	77
	1886	100	80
	1887	100	80
	1888	100	82
	1889	100	84

Transactions A. I. M. E., vol. xviii. p. 59. Presidential address of Richard Pierce: "If it were not for the great improvements which have been made from time to time to cheapen the cost of smelting, silver mining would have received its death blow long ere this. . . . . The cost of mining has been largely reduced by improved facilities for transportation, by cheaper labor, and by cheaper materials, enabling him to sell at

The second and most important element of the production of silver is the supply of ore. It is probable that the richest mines in the United States have been exhausted, since the silver industry has received a tremendous development within recent years, and the country has been pretty thoroughly prospected.[1] Notwithstanding the great depression which has affected the silver industry in the United States since 1892, and the low price of silver which forced large numbers of mines to suspend operations, the production of this country, which had declined from 63.5 million oz. in 1892 to 49.5 million oz. in 1894, rose to 55,727,000 oz. in 1892[2] in spite of

a profit ores that formerly were worthless. These same elements have, of course, helped the smelter to a still greater degree, and there is yet room for further development."

The chronology of the principal discoveries begins about 1867.

1867. Discovery of rich deposits of silver ore at White Pine, Nevada.

1868. Emmet mine discovered. Discovery of the Sierra Nevada bonanza.

1869. Discovery of the Eureka lead mines. Sutro tunnel to open Comstock lode commenced October 19 of this year. Discovery of silver ore at Pioche, Nevada. Copper-silver ore discovered at Butte, Montana.

1870. Great silver deposits discovered at Caracolles in Chile.

1871. Discovery of the Great Crown Point, Belcher bonanza in the Comstock.

1872. Discovery of silver at Georgetown, New Mexico.

1873. Discovery of the big bonanza in the Comstock.

1874. Discovery of promising silver mines, including the Silver King in Pinal Range, Arizona. Discovery of rich mines at Leadville.

1875. Discovery of rich silver-lead ore at Frisco, Utah; also, the Horn Silver mine, opened in this year.

1876. Discovery of rich silver veins at Silver Cliff, Colorado. Silver Reef mines in Washoe county, Utah, are opened.

1877. Many new discoveries at Leadville, and Tombstone, Arizona. Discovery of the silver-lead deposits of Sierra Mojuda, Coahuiha, Mexico.

1878. Important discoveries at Aspen, and in the San Juan region, Colorado.

1881. Discovery of silver ore at Lake Valley, Mexico, and in Calico district, California.

1883. Broken Hill discovered.

1885. Discoveries of the silver lead in the Cœur d'Alene, Idaho.

1890. Silver-lead smelting industry established in Mexico.

1891. Discoveries at Creede.

—See ROTHWELL's *Mineral Industries*, 1892, pp. 229–232.

[1] *Cf. Report of German Monetary Commission*, 17th–20th sessions, pp. 105–108.

[2] *Report of the Director of United States Mint*, 1891.

the constant decline in price. This would seem to indicate that the possibilities of silver production in the United States are by no means exhausted. The large quantities of zinc-lead ores which exist in Colorado and Arizona offer a wide field for the application of the new discoveries in the methods of their reduction.[1]

The deposits of silver ore of all kinds in Mexico are of enormous extent. Especially in the western portion, in the region of the Sierra Madre, unlimited quantities of low-grade ores are located. It should be remarked that throughout most of the silver districts of Mexico only the high-grade ores have been worked, and that it has been from these that the great expansion in Mexican silver production has almost entirely been derived.[2]

The ore is transported to the railroad from this region by pack animals. Fuel is very scarce, and this prevents the introduction of improved processes. Railway transportation would immediately solve many of the difficulties of silver production in the Sierra Madre.[3] With the opening of railroad facilities, we may reasonably expect a great increase in the silver production of Mexico. Zinc-lead ores exist in great abundance in the eastern part.

Immense deposits of silver ore are known to exist in Honduras, both virgin ores and those found in the old mines of the Spaniards, which were abandoned at the beginning of the present century. The methods employed at these old workings were exceedingly primitive, and the production was consequently small.[4] Only within recent years has the silver production taken

[1] ROTHWELL, *Mineral Industries*, 1892, p. 316.

[2] Production of Mexico has expanded from 650,000 kg. in 1877 to 1,463,361 kg. in 1894.—*Report of the Director of the Mint*, 1894.

[3] I am indebted for many of the facts regarding Mexican silver production to Dr. Farrington, Curator of the Department of Geology, Field Columbian Museum. *Cf.* also ROTHWELL, *Mineral Industries*, 1892, p. 201: "The mining industry of Mexico at the present time stands in much the same position as that of the United States fifteen years ago, when the era of railway building and the establishment of a great metallurgical industry was just dawning."

[4] At one mine, the Opolica, it is estimated that 200,000 tons of ore are on the

on new activity with the introduction of English and American capital.[1] This development began about 1887, and the old mines are rapidly being equipped with modern machinery. Electric motors are in use in some of the workings. "The silver belt extends clear across the country, and is fully fifty miles wide."[2]

Passing to South America, the most promising field for silver mining is found in Bolivia. The wealth of this country in silver ore is beyond calculation. At the Pulacayo mine, 446 meters below the main level, the veins run 12 feet wide and 130 ounces to the ton of ore. The supplies of silver in sight at this mine are estimated at 50 million ounces.[3] Large amounts of ore still exist in old Potosi. This mine, which at one time produced silver to the value of 10 million dollars per year, was abandoned by the Spaniards at the beginning of this century, and was not reopened till 1889. It has been equipped with the best mining machinery, and a large increase is to be expected in its production. Only a small portion of the old workings have as yet been touched.[4] Senor Jose Maria Dalenci,[5] writing in 1851 of Bolivia, gave the number of mines abandoned as 10,000, and those in operation as 148.

Rich deposits of silver ore are known to exist in Peru, which have only to a limited extent been exploited.[6]

Passing to Europe, large deposits of untouched silver ores are to be found in Spain, Portugal, and Scandinavia.[7] Extensive

dumps which will yield from $10 to $20 per ton. Several million tons of ore are in sight at this mine.—*Transactions A. I. M. E.*, vol. xx. p. 394.

[1] Production of Central American states, 1887, 48,123 kg.; in 1894, 77,641 kg.—*Report Director of the Mint*, 1888 and 1895.

[2] Thatcher in *Transactions A. I. M. E.*, see note 2 above.

[3] *Report of Director of Mint on Production of Gold and Silver*, 1894, p. 208, quoting Alfred St. John, British consul at Lima.

[4] *Transactions A. I. M. E.*, vol. xix. p. 74, Arthur F. Wendt.

[5] *Report of Director of Mint on Production of Gold and Silver*, 1891, p. 98, giving letter from Anderson, U. S. minister to Bolivia: "At intervals of every fifteen or twenty miles within this great silver belt are to be seen the abandoned mines of the old Spaniards. Since that time (1851) the conditions have not materially altered. Most of the recent increase in production has come from the old mines."

[6] ROTHWELL, *Mineral Industries*, 1892, pp. 400–1.

[7] *Report of German Monetary Commission*, p. 100. Evidence of Stelzner.

workings exist in Greece.[1] Large deposits are also found in Japan.[2]

Finally, in Australia, the Ashcroft process has made possible the exploitation of the immense beds of zinc lead ore which exist in New South Wales. At one mine, that of Cockle Creek already referred to, more than two million tons of low-grade silver ore are in sight.[3] Large deposits of silver ore also exist in Tasmania.[4]

A third factor in the supply of silver which has doubtless exerted a considerable influence is the silver standard prevailing in Mexico and the Central and South American silver countries. The miners' wages are paid and most of the supplies are purchased in terms of the silver standard. Domestic prices and wages have not varied with the price of silver, and, by consequence, the fall in silver has not affected the profits of mine owners to the same extent as in the United States. Their expenses in silver remained at about the same figure and their only loss came from a lower rate of profits measured in gold. This fact has placed mining operators in silver-standard countries at an advantage in competition with their competitors in the United States and Europe, and has doubtless to some extent increased the supply of silver, though we should be careful not to exaggerate its importance.[5] This advantage accruing to the mine owner has not been at the expense of the laborer except in so far as the laborer has been a consumer of imported com-

[1] *Report of Director of Mint on Production of Gold and Silver*, 1891, p. 233.

[2] *Report of Director of Mint on Production of Gold and Silver*, 1894, p. 244, quoting official report of the Japanese department of mines: "The mineral wealth of this country as now known is something enormous, ... gold, silver . . . . in these and other provinces seems almost inexhaustible."

[3] *Australian Mining Record*, January 1897.

[4] *Report of the German Monetary Commission*, cited above, Note 1.

[5] *Report of Director of Mint on Production of Gold and Silver*, 1894, p. 208: "The fact that all laborers in the mines are paid in silver renders the cost of production extremely low . . . . The lesser sterling value of the wages paid compensates to some extent for the fall in the value of silver, the wage rate not having risen since the recent heavy fall in silver." *Cf.* also *Special U. S. Consular Report on Money and Prices in Foreign Countries*, pp. 116, 117, 122, and 145.

modities. He receives the same amount of silver, and with that silver buys practically the same quantity of food, clothing, and shelter in so far as these are the productions of his own country. It is not to be expected that this superiority of the silver producers in silver-standard countries will long remain. With the growth of international exchange, the decline in silver is destined finally to make itself felt in even these backward communities, though the natural inertia of prices, unassisted by credit expansion, may for a time delay this result.

To summarize this portion of our study: We find that the increase in the supply of silver, which has been the main cause of its fall in price, has been due to the application of improved processes and appliances to a series of ore discoveries extending over the last thirty years; and that this advance of improvement has constantly lowered the cost of producing silver.[1]

The foregoing discussion authorizes a brief examination of the major premise of the bimetallic argument, viz., that it is possible, by the joint action of Europe and the United States, to establish a parity between the two metals at a ratio of 15½ or 16 to 1, by the admission of both to free coinage at one of these ratios.[2]

The first prerequisite to the realization of this plan is to overcome the prejudice against silver and in favor of gold which so evidently exists among the business classes. Their coöperation is necessary both to the enacting of a bimetallic law and to its support. It would be useless for legislation to declare one ounce of gold equal to sixteen ounces of silver if the persons most interested refuse so to receive it. We may well question the foundations of this prejudice. With the growing use of paper representatives for coin, the advantages in weight which

[1] I am glad to acknowledge my indebtedness to Dr. Nichols, Assistant Curator of the Department of Geology, Field Columbian Museum, for his valuable suggestions and kindly assistance in the preparation of this part of the present article.

[2] I omit, for obvious reasons, any discussion of the practicability of so-called "national bimetallism." Few writers of repute have deemed this practicable, and some of the strongest supporters of international bimetallism, notably General Walker, have earnestly opposed independent action on the part of the United States.

gold has hitherto enjoyed over silver as a medium of exchange have largely disappeared. Metallic money is today seldom employed even in the United States and Great Britain, while the rapid spread of credit facilities upon the continent argues for a similar condition there. As a basis for representative money the advantage which $1000 in gold enjoys over the like amount of silver is only in respect to its greater portability. But since transportation charges on the precious metals are estimated on a basis of value alone for gold, and of both weight and value for silver, this advantage is considerable.[1] The assumption upon which most of the current prejudice is based, that gold is more stable in value than silver, is not at all points substantiated by the facts. A comparison of the relative movements of general prices and silver since 1873 shows silver, during this period, to have been more stable in value than gold, if stability be reckoned on the basis of the fluctuations of prices and silver.[2] But whatever the foundation of this prejudice, its existence and strength cannot well be denied, and must be reckoned with in any attempt to treat gold precisely as silver.

Assuming this objection to have been overcome, and the mints of the world to have been opened to the free coinage of gold and silver at one of the old ratios, it is interesting to note the probable effect of this action upon the market ratio. The immediate result would doubtless be a great rise in the value of silver. To the extent to which gold would be withdrawn from circulation, to that extent would an additional demand be created for silver which would tend to equalize the two metals, at the mint ratio, even if the value of gold was not materially lessened by the increased supplies going into the arts. Speculation is useless as to the probable extent of this rise in silver;

[1] Charge on $1000 from Chicago to New York, on gold, $1.25; on silver, $1.25 + $2.50 per hundredweight; $1000 in silver weighing 60 pounds, total charge would be $2.75. These figures were furnished by the Adams Express Company.

[2] *Cf.* note on "Gold and Silver in Terms of Commodities," in the JOURNAL for March 1897. It was there shown that, even taking the period 1850 to 1895, silver had on the average maintained a greater stability of purchasing power than had gold, and that since 1873 the advantage lay decidedly with silver.

but since the increased demand would fall practically on the yearly production, there is reason to believe that the immediate advance would be considerable. It is not a valid objection to this conclusion to assert that the exchange value of the entire amount of silver in existence must be raised, for we have already shown that only that part which either is, or is expected to be, within the market can affect the price. The fears of large sales by Europe are not well founded. If these nations which hold large quantities of silver were to consent to the establishment of international bimetallism, it is unlikely that they would combine to defeat the success of their own measure by selling such silver as chanced to be in their possession. Nor is it likely that any considerable quantity of silver would come from the arts or from the stores of India to enter the silver market, if we may judge from past experience. The standard might be lowered, or it might remain unchanged, according as the effect of a bimetallic law was to equalize the two metals by raising silver without lowering gold; or by raising silver and depressing gold; or by merely raising silver without any equalization of that metal with gold. In any event, the lowering of the standard would not be to the present value of silver.

But that a decline to the present value of silver could long be postponed, from our previous examination of the possibilities of silver production, it is impossible to deny. The application of improved methods to the tremendous silver resources of the world, an application greatly stimulated by the increased profits arising from a higher value of silver, would without doubt expand the production to meet any conceivable increase in demand. Silver would fall to a point where its supply could be regulated by cost of production; and the world would have descended to a lower standard. Whether, under these circumstances, the circulation would be composed of both silver and gold is difficult to decide, and we will not now attempt a decision. If the demand from the arts were sufficient to absorb the available supplies of gold before it reached a parity with silver at the mint ratio, the world's business would be done with

silver alone. If this demand were not sufficient, both silver and gold would without doubt remain in more or less concurrent circulation.

In conclusion, it is important to observe that with the standard regulated by the production of silver the result, at least for some years to come, would be a greater stability of prices than has been the case since 1873. Silver, as we have seen, can no longer be considered as a precious metal. The element of discovery in its production has practically disappeared, and its supply, like that of iron, copper, or lead, is dependent only on the application of capital to well-known ore deposits. This fact places it on a parity with the great mass of extractive products, and warrants an opinion that as they become more or less abundant, the production of silver would be correspondingly influenced. Whether this would be a desirable result, viz., a condition of stable prices, it is not in the scope of this article to decide; but it is pertinent to our inquiry to point out that such would be the probable outcome of the admission of silver to the mints of the world on equal terms with gold.

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THE DIVERSION OF THE FLOUR AND GRAIN TRAFFIC FROM THE GREAT LAKES TO THE RAILROADS.

I.

PREVIOUS to 1850 the importance of the great interior water routes cannot easily be overestimated. The commerce of the great agricultural states of the West drifted to the two great natural waterways, the Mississippi River running to the South, and the Great Lakes and their eastern outlets, the Erie Canal and the Welland Canal in conjunction with the St. Lawrence River, running to the East. Although the West possessed these two unrivaled waterways, yet there were but few localities which could choose between the two. Physical conditions usually left no choice. To the settler near the lakes the eastern route was the only available highway, and to the farmer living near the banks of the Mississippi the river was the only possible route. This was the case because land transportation was well-nigh impossible. The value to the states bordering on the Great Lakes of the lake and canal route from the date of the opening of the latter in 1825 down to the middle of the century, and even for a number of years thereafter, is incomputable. Over the Great Lakes and through the canal passed the bulk of the surplus products of the West and practically the whole of the merchandise shipped from the East to the West.

To realize fully the importance of the water routes, even up to a comparatively late day, it is necessary to understand the services it was intended the early railroads should render. They were designed to connect waterways, not to compete with them. Before the construction of railroads the traffic of the country that was other than local in character moved upon and to and from one of our four great waterways. These were the Atlantic Ocean on the east, the Great Lakes and the Erie Canal and St.

Lawrence on the north, the Mississippi River and its tributaries on the west, and the Gulf of Mexico on the south. This being the situation, the railroads which were intended to serve anything more than local needs sought to co-operate with one of these waterways, and the projectors of nearly all the railroads which it was hoped would become trunk lines sought to connect two or more of the four great water routes. The construction of the great trunk lines clearly shows this, and nothing could more strongly emphasize the importance of the lake route at this early day than the uniformity with which the railroads sought it. A glance at a railroad map of the later fifties will also clearly show that the water routes formed the base of all the great transportation systems. In some cases it is true the water routes were paralleled, but these instances were comparatively rare, and even in these cases the railroads were not regarded as competitors of the water routes for through traffic in heavy commodities. Passenger traffic, local business, and through freight in the more valuable commodities were the main reliance of the railroads.

This state of affairs, however, was very much changed in the twenty years covered by the period from 1860 to 1880. These two decades were replete with improvements in rail transportation. Advances, to be sure, were also made in water transportation, but the progress made in land carriage was much the greater. Limitations of space forbid a detailed presentation of the improvements introduced that made the railroads effective competitors of the lake carriers — nothing more than an enumeration of the most important advances can be attempted. Progress was made in all departments. The permanent way was improved by reduction of grades, better alignment of track, improved drainage and ballasting, and better bridges. But far more important than these improvements was the introduction of steel rails. It is doubtful if the railroads could ever have become effective competitors of the lake carriers without steel rails, for the latter, although of transcendent importance in themselves, became doubly significant because of the advance along various lines that they made possible. The greatest of these

improvements was made in the rolling stock. With stronger tracks much heavier engines could be built and cars could be loaded more heavily. Steel was in a large measure substituted for iron in the construction of locomotives; a great saving was made by the change from iron to steel tires. With a very slight increase in the dead weight of cars the carrying capacity was doubled. There was also great progress made in making up and running of trains. The consolidation of connecting lines (and the extension of other lines by lease or by new construction or by purchase) which had set in before 1860 became a feature of railroad history during the period covered by the years intervening between 1860 and 1880. By consolidation the cheap and expeditious movement of freight between distant points was greatly furthered. About the largest expense of transportation in the early days was the transhipment charges. Consolidation did much to obviate the necessity of frequent transfers of freight. But even after consolidation had made considerable progress the extended movement of bulky freight remained subject to many delays and charges due to transshipment at connecting points. These evils were in a large measure overcome by the organization of through freight lines. But one more advance can be mentioned—it is scientific rate making. This has revolutionized railroad transportation. In the primitive days of railroading the toll sheets showed but little differentiation of charges. The principle of charging what the traffic would bear was never applied with anything like thoroughness. The decisive change in rate making came when it was recognized that it may be profitable to establish a rate which will result in a net gain, however small, above the expenses arising strictly from the mere handling and moving of freight and such incidental expenses as are properly applicable to it. In other words, it is not always to be insisted upon that any given traffic must bear its full share of the total expenses of the road; the question is rather, will this traffic form a profitable auxiliary of the existing traffic.

By the early seventies the long list of improvements which have been enumerated, and others of less importance but never-

theless of great moment in the aggregate, had progressed so far as to change the relation existing between the lake carriers and the railroads.[1] The latter were now in a position to enter into effective competition with the lakes in the transportation to the seaboard of the agricultural products of the West. As a very large portion of the east-bound traffic from the West was at this time composed of agricultural products, nearly the entire east-bound business now became competitive.[2] In 1876 it was estimated that grain and flour constituted about 50 per cent. of the entire eastward movement of through freights.[3]

It must not be understood that rail rates — from Chicago to New York, for example — were now normally lower than, or even so low as, the lake rates; for such was not the case. Rail rates had, however, fallen so much that, taken in connection with several positive advantages offered by rail transportation, rail rates were more advantageous than were the lake rates, even though the latter were usually lower. It may be well, at this point, to state that the transportation charges as published in the *Statistical Abstract* and in the reports of boards of trade are not to be accepted without modification. The lake charges are approximately correct, but the rail charges are generally too high. The latter are averages of the officially published tariffs, but men in a position to speak authoritatively say that practically no grain is shipped at these rates. Now, as the difference between the lake and the rail rates is not so great as the nominal difference, the additional advantages which the rail lines must afford in order to compensate for their higher charges need not be so great as would at first be supposed. Shipment by rail

[1] Long before this the railroads had demonstrated their ability to compete with canals.

[2] In this statement is not included the lumber and ore traffic of what is known as the Lake Superior region.

[3] *Internal Commerce of the United States*, 1876, p. 67. The total shipments east from Chicago during the year 1878 amounted to 4,862,385 tons; to this sum, grain, flour, seeds, and feed contributed 3,137,032 tons, or a little more than 64 per cent. Almost the whole of the balance was made up of animals and their products.—*Ibid.*, 1879, p. 99.

obviates transshipment with its costs. So far as through shipments from Chicago to New York are concerned, the cost of transfer does not weigh either way with the shipper, for it falls upon the carrier, and he looks to the through rate which he receives for reimbursement. In case the flour or grain is not forwarded on a through bill of lading the cost of transshipment falls upon the shipper. Grain carried by "wild" vessels, that is, vessels which have no rail connections and are not running under contract, but fix their rates from day to day as business may determine, is not carried on through bills of lading and the owner of the grain would therefore pay the terminal charges. These terminal charges consist of the elevator charges and those for shoveling and trimming the grain in the hold of the vessel. Much of the flour and grain sent to local points about the lakes cannot be sent on through bills of lading and would therefore be obliged to pay the terminal charges. In some cases the shipper, after his flour and grain have arrived at a lower lake port, finds it to his advantage to ship his grain further on. In such instances the through rate generally cannot be obtained and the owner of the grain pays the terminal charges. Most of the elevators at the lower lake ports are owned by railroads which operate them in connection with water lines. This being the case, and as most of the grain shipped over the lakes is carried on through bills of lading, it may legitimately be inferred that the amount of grain which has been diverted from the lakes because of the excessive elevator charges at the lower lake ports is not so great as has often been imagined, and it may further be inferred that the completion of the new elevators at Buffalo, which are to be independent of the elevator pool, will not greatly increase the amount of grain carried over the lakes.[1]

During the process of transshipment there is some loss of grain, but as the lake carriers deliver the amount for which they

[1] Perhaps in the above discussion the importance of the "wild" or tramp vessels has not been sufficiently recognized. These vessels do not run in connection with any railroad, and as a consequence the vessel and the grain which it carries pay the full elevator charge. Now, if the elevator charges were lower there can be no doubt but that "wild" vessels would be a more important factor in lake transportation than

give receipts, the shipper loses nothing. In this particular the shipper rather favors the lake route, for the railroads refuse to receipt for a definite amount, and as a consequence any loss in transit falls upon the shipper unless he can clearly prove that there was a loss in transit—which he usually finds it very difficult to do.

As railroads are responsible for the safe delivery of the goods placed in their care the shipper does not insure his property, which he would feel obliged to do should he consign his property by the lakes.[1] Grain carried in cars during the seasons of the year when grain is likely to heat, arrives in better condition than if sent by water; grain already somewhat damaged by heat always goes better by rail. Expedition is sometimes very desirable and the railroads deliver commodities with greater dispatch than the lake carriers. And finally the terminal facilities of the railroads are much better than those of the water lines, and by patronizing the railroads shippers are often enabled to save considerable sums in the form of cartage charges. This is more true of flour, corn, and oats than of wheat, for the last is not delivered directly to consumers, but is first delivered to millers who have terminal facilities. Flour, corn, and oats, on the other hand, although generally not delivered directly to consumers are, however, delivered to persons at least one step nearer the consumers than are the millers who receive the wheat.

When the railroads found that they could successfully compete with the waterways it was discovered that the lack of suitable terminal facilities at the seaboard cities for transferring grain from cars to ocean vessels and for storage became a serious handicap. Down to about 1865 none of the trunk lines possessed elevator facilities on the Atlantic coast. At this time there was an elevator built at a wharf on the Delaware, in Phila-

they are now, but to what extent their importance would be increased it is difficult to estimate.

The elevator charges at Buffalo for a series of years are given in the Appendix on page 414.

[1] In 1872 the rate of insurance was about $1 on the $100 (*Transportation Routes to the Seaboard*, vol. i. p. 17). It is now about thirty cents on $100.

delphia, under the patronage of the Pennsylvania Railroad Company, and this was probably the first stationary elevator erected on the Atlantic coast.[1] Up to the close of the year 1870 the Baltimore and Ohio Railroad Company was the only road which had already provided adequate terminal facilities for the handling of grain.[2] New York City, although the chief port of the export grain business, did not possess a single stationary elevator.[3] The use of elevators would have necessitated the adoption of the western method of handling grain by "grades." The custom of selling grain on sample had become too firmly fixed by fifty years of habit to be easily uprooted, and especially so, as such a departure would seriously impair the value of enormous vested interests of the very persons who were expected to make the change. The great expense involved in the old method of handling grain if shipped in bulk at the railroad terminals, and the great reductions made by the introduction of elevators will be seen by the following statement made up by the general freight agent of the Baltimore and Ohio Railroad: "Previous to January 1872 all grain shipped to Baltimore in bulk was unloaded by hand, at an expense of from four to five cents per bushel. At that time the company completed an elevator of 600,000 bushels capacity, and reduced the charge for receiving, weighing, wharfage, delivery to vessels and storage for ten days, to 1¾ cents per bushel, by which means also the detention to vessels in loading was reduced from five or ten days to as many hours.[4] Two years later, when the Baltimore and Ohio entered Chicago and became an aggressive competitor for a share in the movement of agricultural products from the West, all the other trunk lines were forced to improve their terminal facilities. Without proper facilities for handling grain at the seaboard no road could meet the competition of the lake and canal route, for this line possessed fairly satisfactory terminals. The transfer charge of from four to five cents was sufficient to turn

[1] *Development of Transportation Systems in the United States*, RINGWALT, p. 211.

[2] *Report of the Select Committee on Transportation Routes to the Seaboard*, vol. i. p. 27.

[3] *Ibid.*, vol. ii. p. 346.

[4] *Ibid.*, vol. i. p. 27.

grain to the lake and canal route. Not only was the movement of grain by rail checked by the high charges at the seaboard terminals, but it was at times entirely inhibited by the lack of facilities for removal of grain from cars. Mr. C. M. Gray, assistant general freight agent of the Lake Shore and Michigan Southern Railroad, in testifying before the Senate committee on transportation routes to the seaboard, stated that the lack of terminal facilities at the seaboard for promptly unloading cars had resulted in such a shortage of cars on the Pittsburg, Fort Wayne and Chicago, and Michigan Central in the winter of 1872–3 that these roads were practically forced to suspend the movement of bulky freight for a period of six weeks because of a lack of cars. His own road, the Lake Shore and Michigan Southern, was reduced to such straits by the dearth of cars that it was forced "to cut off all freight west of Chicago and receive nothing except the local freight of Chicago."[1]

Up to within very recent times our government has taken but little interest in our internal commerce and has therefore collected but little information concerning it and thus it is impossible to set forth as definitely and accurately as might be desired the diversion of the grain business from the Great Lakes to the railroads. We shall in the main be forced to rely for statistics upon the reports of the commercial bodies of the cities chiefly concerned in the grain business, and unfortunately they have not collected as full information as could be desired. From the two sources, however, enough information can be obtained to present fairly the change which has taken place; but this cannot always be done in the simplest manner.

The diversion of the flour and grain traffic from the lakes to the railroads will be considered under the following heads: (1) the diversion of the flour and grain business as shown by the movement of these commodities by lake and rail from Chicago; (2) the diversion (if any there be) as shown by such data as we have of the total eastward movement, and (3) the export movement from the West through the gulf ports.

[1] *Transportation Routes to the Seaboard*, vol. ii. p. 280.

II.

THE LAKE AND RAIL TRAFFIC EASTWARD FROM CHICAGO.

In the early sixties the railroads began to make serious inroads into the flour business from Chicago and during the eighth decade secured the lion's share of this business. Flour was the first heavy commodity of comparatively low value that the railroads carried in competition with the water lines. The railroads gained this traffic, partly because shipment by lake to points not accessible to lake craft involved a transshipment, and flour could not be transferred with the same ease and facility that grain could be transshipped; partly because barrels are broken in this process and in passage if rough weather be encountered; and finally because expeditious delivery is frequently demanded—the elements of time being of much greater importance in the movement of flour than in that of grain. To these causes may be added a fourth—the cost of marine insurance. The diversion from the lakes to the railroads of the traffic in flour will be seen from the table on page 415 of the Appendix. It will be noted that from the opening of the seventh decade the railroads rapidly monopolized the business and continued to do so until the year 1888. Since 1887 the relative importance of the rail lines has diminished. It is also to be noted that the flour business of Chicago reached its maximum volume in 1887.

The decline of the rail business is closely associated with this fact. Until 1888 the bulk of the flour shipped from the West passed through Chicago. But in 1888 by the completion of the Minneapolis, St. Paul, and Sault Ste. Marie Railway[1] much of the flour business was diverted from Chicago. This line, in connection with the Canadian Pacific and lake vessels, at once

[1] Since 1882 the construction of a railroad from Minneapolis and St. Paul to the north of Lake Michigan and the lower lakes to the seaboard had been much discussed by the millers and shippers of these two cities. Such a line, it was hoped, would be of signal advantage to the interests of these two cities and of the entire Northwest, for by this road not only the distance to the seaboard would be materially shortened in comparison with the circuitous route around the head of Lake Michigan, but the uncertainty of a speedy movement through the freight yards of Chicago would also be obviated.

became a strong competitor for the flour and grain business of the Northwest. During the year 1888 it forwarded from Minneapolis 931,500[1] barrels of flour, and as almost the whole of this would have been through rail business had it gone through Chicago, the rail movement of flour from Chicago was reduced by almost the whole of this amount. Since 1888 the shipments of Minneapolis flour over this road have rapidly increased, and as a consequence the rail movement from Chicago has diminished.[2] Since 1887 shipments of flour to the ports at the head of Lake Superior have also greatly increased, and the combined rail and water route formed by the Wisconsin Central and the Ann Arbor Car Ferry Line, and the Flint and Pere Marquette Railroad, has recently entered the field for a portion of the flour business which formerly passed through Chicago.

For many years the long-distance traffic of the railroads was almost wholly confined to the transportation of live animals, provisions, and general merchandise. As we have seen, however, at a comparatively early day the railroads secured a large portion of the flour business. In 1872[3] they became in the fullest

[1] *Report of Minneapolis Chamber of Commerce*, 1888, p. 157.

[2] The yearly shipments of flour from Minneapolis as given in the *Reports of the Minneapolis Chamber of Commerce* have been as follows:

Year	Barrels	Year	Barrels	Year	Barrels
1888.....	931,502	1891.....	1,200,642	1894.....	1,458,146
1889.....	1,367,792	1892.....	1,684,005	1895.....	2,111,455
1890.....	1,156,516	1893.....	1,720,166	1896.....	2,419,914

[3] The following table covers the period in which the great change took place:

Eastward shipments of wheat from Chicago

Year	By lake (bushels)	By rail (bushels)
1870.....	13,429,069	2,621,699
1871.....	12,120,923	576,468
1872.....	8,831,870	2,363,810
1873.....	15,528,984	8,149,209
1874.....	16,974,149	9,729,251

sense competitors of the lakes for the wheat traffic. Up to this time, although they had in various years carried considerable quantities of wheat, they had never been regarded by the lake carriers as serious rivals.

In the spring of 1872 the railroads entered the field for a part of the grain traffic, and secured a liberal portion of it throughout the season of navigation; in the following year the struggle was continued, the railroads securing a large share of the business. Since 1873 the contest has been maintained. In some years the railroads have made great encroachments into the traffic and in other years the lake carriers have almost monopolized the business. Shipments by rail almost equaled those by lake in 1881 and again in 1885. Since the latter year the lakes have held their own, and in some years have captured nearly all the wheat; during the year 1896, however, the railroads secured a large portion of the shipments. The yearly movement by each mode of transportation since 1860 is made clear by the figures given in the Appendix on page 415.

In the years previous to 1873, with some exceptions, most of the wheat taken from Chicago by the railroads was secured in the winter months when lake navigation was closed. Since 1873 the largest rail shipments have often been made after the navigation season had fully opened.[1]

[1] The seriousness of the competition offered by the railroads at times during the navigation season will be made evident by the following table:

Year	Shipments during the month of May		Nominal difference of rates in favor of the lake and rail route as against the all-rail route
	Lake	Rail	
			Cents
1872	272,591	340,584	2.0
1873	1,823,310	947,902	6.0
1874	2,367,796	1,210,352	7.0
1875	1,160,435	735,666	10.0
1876	1,810,340	1,114,137	1.0
1877	755,962	270,110	3.6
1878	902,958	1,369,732	3.1

Internal Commerce, 1876, charts 2 and 3; and *Internal Commerce*, 1879, Appendix,

In shipping by rail the marine insurance is avoided, the grain is less liable to damage in transit, is moved more rapidly, and marketed more readily, thus giving quicker returns and thereby saving interest charges; but these advantages combined were not sufficient to overcome the additional rail charge which was frequently exacted. It is safe to say that the marine insurance in all but exceptional cases was less than one cent per bushel and the difference in time between the all rail and the lake and rail was not a large factor. The danger from heating in special cases would be very great and in others it would quite disappear. For May 1875 the difference in rates amounted to ten cents, and with such a variation it is surprising that the railroads should have secured any wheat at all. With a fuller knowledge of the situation, however, this will be readily understood. The published rates were not the real rates. Says Mr. E. H. Walker, statistician of the New York Produce Exchange, "During a portion of the year 1875 the transportation by rail has been by the agreed schedule of rates."[1] The implication is that rates were generally not maintained. From January to October the rates given in the *Internal Commerce Reports* remained stationary, then fell one cent for October, but recovered for November and rose to twenty-eight cents for December. The statistician of the New York Produce Exchange[2] says that rates were very low from the opening of the year until October, when they advanced very sharply. He also informs us that flour and grain were carried in large quantities from St. Louis to New York by all rail at twenty-four cents per one hundred pounds, which would be equivalent to fifteen cents per bushel.[3] It is hardly to be supposed that the rate from Chicago to New York was maintained at twenty-four cents with a rate of fifteen cents from St. Louis. That railroad rates were not stable during the year 1875 is also testified to by Mr. Charles

pp. 246–7. The fourth column of the table shows a surprising amount of freight secured by the railroads in view of the great difference which frequently obtained in rates.

[1] *New York Produce Exchange*, 1874–5, p. 231.

[2] *Ibid.*, 1874–5, pp. 231–5.

[3] *Ibid.*, 1874–5, p. 232.

Randolph in his report as secretary for the Chicago Board of Trade.[1]

In a general way it may be said that the corn traffic has followed the same course as the wheat traffic. The railroads appear, however, to have secured a considerable share of this business at an even earlier time than they obtained a large part of the wheat traffic. During the years 1868, 1869, and 1870 the railroads carried considerable quantities of corn, and then for five years transported but little of this commodity. In the movement of this important crop the year 1876 was the decisive turning point. The crop of corn grown in 1875 was large and of good quality and the export demand was steady and strong, so the grain was moved rapidly forward by rail. Throughout 1876 the rail routes competed vigorously with the lake lines, and obtained a large share of the traffic. During the months of May and June 6,208,706 bushels of corn were shipped from Chicago by lake, and 5,588,830 bushels by rail.[2]

Since 1876 the railroads have maintained a struggle for this business, and the outcome has been more favorable to them than the issue of their contest for the wheat traffic. This is highly gratifying to the railroads, for the amount of corn transported vastly exceeds that of wheat. The amount of corn carried by rail during the year 1884 was almost equal to that transported by lake; during the following year the shipments by rail again almost equaled those by lake, the amounts being respectively 28,590,374 and 29,382,591 bushels. Corn, as it usually contains a larger percentage of moisture than wheat, is more liable to heat when placed in unfavorable surroundings. It is therefore desirable when the grain is not in the best of condition, and during the germinating season when it is particularly prone to heating, to ship it in cars, where it will not be gathered together in large masses and where the air has a better chance to come in contact with it, than in the holds of vessels where it is collected in

[1] *Report of Chicago Board of Trade*, 1875, pp. 18, 19.

[2] *Internal Commerce*, 1876, chart No. 3. Navigation opened before the first of May.

immense quantities in damp surroundings. The greater success which has attended the efforts of the railroads to gain the corn traffic than has resulted from their attempts to secure the wheat traffic from the lake carriers is probably due to the fact that the danger of heating in the case of corn is much greater than in that of wheat.

We have now considered the partial diversion from the lakes to the railroads of the flour, wheat, and corn shipped from Chicago to the East. There yet remains to be considered the movement of oats—the one grain not yet considered which is shipped eastward in large quantities. Rye and barley, the other important cereals, are not transported in sufficient amounts to warrant separate treatment; during 1896 the aggregate shipments by lake and rail from Chicago amounted to but 10,490,496 bushels.[1] Their movement may be inferred in a general way from the discussion of the transportation of the other grains.

At a very early date, as will be seen by an examination of the table on page 416 of the Appendix, the transportation of oats by rail assumed an important position. During 1862, 1863, 1864, and 1865 a very large portion of the oats carried out of Chicago was taken by the railroads. This was largely due to the exceptional conditions which prevailed. The principal contracts let all over the United States for supplying the armies in the South with oats were filled in Chicago. As a result the shipment of oats from Chicago during the war increased with surprising rapidity; for the year 1861 they amounted to only 1,633,237 bushels, while for the last nine months of 1864 and the first three months of 1865 they reached the large total of 16,470,927 bushels. As a natural consequence the railroads leading from Chicago were called upon to transport much of this grain, and as there were no railroads running far to the South, west of the Mississippi River, and but a single road crossing the Ohio River and running to the South through Kentucky, it became necessary to send commodities to the southeastern points by the roundabout eastern lines. After the war closed the movement of

[1] *Report of Chicago Board of Trade*, 1895, p. 3.

oats by rail diminished somewhat, but very shortly increased at a rapid rate, and in 1873 the shipments by rail greatly exceeded those by lake. From 1873 to 1886 the railroads secured almost the whole traffic, and in some years left but an insignificant amount to the lake carriers. Since the latter year the vesselmen have re-entered the field for this business and now obtain a large portion of it; but the railroads still hold the larger share.

The statistics of the movement of oats show that the railroads carried a larger proportion of this than of other grains. This is surprising, for oats is a commodity of comparatively low value and large bulk. The larger rail movement of oats is due to several causes. Oats take up moisture more readily than other grains and as a very small amount will cause oats to become musty, and thus unfit for horsefeed, this grain when not in the best of condition is generally shipped by rail. Recently there has been a device invented for "clipping" oats by which the portion that most freely absorbs moisture can be removed at slight expense. By "clipping" the weight of the measured bushel is also increased by some four to six pounds. During the germinating season grain is more liable to spoil and during this period it is safer to ship by rail. But there is another and far more potent reason for the unusually large rail movement of oats. It is the lake rates. These are fixed more upon the basis of bulk than of weight, and as oats is a bulky[1] product the freight per hundred pounds is considerably higher than on wheat and corn. Enough oats cannot be stowed away in the hold of a ship to secure a cargo equal in weight to that of the same ship loaded with wheat, and therefore it is necessary to fix a higher rate per hundred pounds upon oats than upon wheat. The grain car, on the other hand, is so large that there is no difficulty in loading it to its full carrying capacity with the bulky product oats, and as a consequence the rail rates on oats are no more

[1] The numbers 32, 56, and 60 represent, with a fair degree of accuracy, the weights of a like bulk of oats, corn, and wheat respectively. The measured bushel of oats weighs about 32 pounds, that of shelled corn 56, and that of wheat 60; the measured bushel of oats, however, more frequently exceeds 32 pounds than does that of wheat exceed 60 pounds.

per hundred pounds than those on wheat and corn. Lake rates per hundred pounds on oats are very much higher than the rates on wheat and corn; for example, the lake rate on oats per bushel for May 25, from Chicago to Buffalo, was 1⅛ cents and the rate upon corn per bushel for this day was the same. The rate on oats was equivalent to 3.516 cents per hundred pounds while the rate on corn was but 2.009 cents per hundred pounds.[1]

III.

THE TOTAL EAST-BOUND TRAFFIC.

An almost entire absence of statistics of the grain and flour transported over the railroads that tap the surplus grain-producing regions stretching far out to the south, west, and north of Chicago makes it wholly impossible to present anything approaching a satisfactory exposition of the general movement of these commodities. Thus far nearly all the facts we possess have been gathered under the direction of the commercial organizations of the cities in which the grain and flour business is centered. While these data are complete enough for many purposes, they are not sufficiently comprehensive to disclose the characteristics of the general movement of the cereals from the interior producing regions to the consuming districts of the East and South and to foreign countries. Thus far our general government has devoted but little attention to inland commerce; the reports on our internal commerce which have appeared up to this time have contained but little statistical matter which had not previously appeared in reports of transportation companies, boards of trade, produce exchanges, and chambers of commerce of our great trading centers. Two exceptions to this general statement may, however, be made—the government engineers sta-

[1] On page 417 of the Appendix may be found a table showing the all-rail through movement of Chicago. The statement shows the quantity of flour and grain received at Chicago over six leading western railroads, and delivered to connecting lines without passing through a Chicago warehouse, as reported by such roads. These quantities are all included in the general statements of shipments in Appendix, except shipments originating in Milwaukee; these are deducted from the shipments of Chicago as given in Table III of the Appendix, but are included in this.

tioned at the St. Mary's Falls Canal and at Detroit have compiled some valuable tables. The statements covering the traffic passing through the Detroit River, however, leave much to be desired. It is to be hoped that our government will soon take the necessary steps for collecting such statistical data as will make it possible to present with some degree of accuracy at least the broad features of our internal commerce.

I shall now attempt to show, but in a somewhat roundabout way, what share of the flour and grain traffic from the West to the East has fallen to the lakes and what portion has been secured by the railroads. The figures which will be given should in no case be wrested from their context. Conditions which obtained at the beginning of the period under consideration no longer exist, and thus the statistics standing by themselves would be very misleading.

The transportation of flour and the chief three cereals—corn, wheat, and oats—will be investigated. In the case of each one of these commodities the receipts at the principal eight Atlantic ports will be compared with the receipts by water at the chief lower lake ports. If the receipts at the Atlantic ports increased at a more rapid rate than those of the lake ports it may be legitimately inferred, if all circumstances except those of transportation remained unchanged, that the railroads were proving the stronger competitor, and *vice versa*. The conditions, however, as will be shown as each commodity is considered, have not remained fixed.

Attention is first invited to the movement of wheat; the transportation of flour will next be taken up. The order of consideration has been purposely changed because the movement of flour is partially explained by the circumstances which have effected the alterations in the shipment of wheat. Nearly all the grain shipped by lake is received at Buffalo and Erie and therefore the receipts of these two ports may be regarded as fairly representing the lake movement. Moreover, the relation between the receipts of grain at these ports and the other lower lake ports has not materially changed, so, for comparative purposes, the

amounts received at Buffalo and Erie may be assumed as reflecting the whole movement by lake. In the comparisons which will be instituted the total receipts at the lower lake ports by lake have not been used for the reason that such statistics cannot be had for the long series of years under consideration. The impossibility of securing statistics of the entire movement to and through the Atlantic states and the eastern portion of Canada has forced me to accept the receipts[1] at the chief centers of the grain and flour business on the Atlantic seaboard as indicative of the whole movement into the regions just mentioned. It thus appears that the value of the comparison turns (1) upon the accuracy with which the lake movement is reflected by the receipts at Buffalo and Erie and (2) upon the permanence of the proportion existing between the total movement to the seaboard and that to the selected ports. As has already been stated the receipts at Buffalo and Erie reflect, with considerable exactness, the total movement by vessel to the lower lake ports. As to whether the proportion between the total movement to the seaboard and that to the selected ports has remained the same, we cannot speak with the same assurance, for we have but few statistics to assist us in forming opinions. As the exports of wheat seem to have maintained a fairly constant relation to the total production of wheat in the United States—yearly fluctuations being left out of account—it may be assumed that the receipts at the seaboard ports of wheat for export have not varied greatly. The question then remains as to whether or not the total receipts at the seaboard ports, less the quantities exported, have increased at as rapid a rate as the receipts at all the other points combined. This question must probably be answered in the negative and for two reasons. In the earlier years of the period under consideration the smaller interior cities seldom enjoyed as favorable freight rates as the larger cities, and so the former often obtained their supplies

[1] Instead of the receipts at Newport News and Norfolk I have used the exports, for the latter alone represent the traffic which may be regarded as competitive between the lakes and the railroads. The other ports selected are Montreal, Portland, Boston, New York, Philadelphia, and Baltimore.

from the latter. And in the earlier years, when the eastern states produced a large portion of the wheat consumed, the smaller cities of the localities where the grain was raised would be sure to obtain the surplus, leaving the larger cities to look to the more remote regions for the satisfaction of their necessities.

By examining the tables in the Appendix (p. 418) it will be seen that from the beginning of the period under examination (1868) down to the year 1876 the combined receipts of wheat at Buffalo and Erie by lake were, although varying from year to year, somewhat more than one-half as large as those of the selected Atlantic ports. In 1876 this relation was slightly changed and for the first time the receipts of the Atlantic ports were more than double those of the two lake ports; there was, however, no great change, as the receipts at the former ports were 42,881,000 bushels and at the latter 21,147,090. During 1877 the lake ports regained their former position, the receipts being 25,791,491 bushels, while the receipts at the Atlantic ports were 46,828,000 bushels. Thus far the relation existing between the receipts at the lower lake ports and at tide water on the Atlantic coast have remained fairly constant, although the aggregate receipts have increased appreciably. A great change took place during the next five years. The ratio between the receipts at the lower lake ports and the Atlantic ports was very much altered; instead of being about as one to two, the ratio was now about as one to three and one-half; for the five-year period the aggregates stood at 172.6 million and 548.6 million bushels respectively. For the year 1881 the receipts at the Atlantic ports were more than four times as large as the receipts at Buffalo and Erie. In 1883 there was a partial return to the relations which formerly obtained, and in 1884 there was a still further change, so that for this year the receipts at the Atlantic ports lacked just a trifle of being double those of the lake ports. For the three succeeding years there was no great change. But in 1888 and in the following years the situation changed so much that for the year 1895 the receipts at Buffalo and Erie almost equaled those of the selected Atlantic ports, the receipts of the

former being 49,033,160 and of the latter 49,205,000 bushels. This proportion during 1896 was changed somewhat in favor of the Atlantic ports.

Thus far nothing but the superficial facts have been presented. These seem to show that the railroads and the lakes maintained a pretty even struggle during the decade beginning with 1868, and that for five years thereafter the railroads gained a decisive advantage and then for a few years waged a stubborn contest, but only to be utterly driven from the field in the years from 1888 to 1896. The facts thus far presented, however, are wholly inadequate for an understanding of the events which have taken place. Conditions have radically changed. The striking fact in the history of wheat growing in the United States during the past thirty years has been the westward and northward movement of the surplus wheat-producing areas.[1]

[1] In speaking of the great wheat-producing areas in this paper I refer only to the wheat-growing region east of the Rocky Mountains. The shifting of areas is made clear by the following table:

PRODUCTION OF WHEAT.

(,000 omitted.)

1869[1]		1879[2]		1889[3]		1895[4]	
States and territories	Yield, bushels	States and territories	Yield, bushels	States and territories	Yield, bushels	States and territories	Yield, bushels
Illinois	30,128	Illinois	51,111	Minnesota ..	52,300	Dakotas ...	90,319
Iowa	29,436	Indiana.....	47,285	Dakotas	40,945	Minnesota..	65,584
Ohio	27,982	Ohio	46,015	Illinois	37,389	Ohio	32,216
Indiana.....	27,747	Michigan ...	35,533	Indiana	37,319	Kansas	22,919
Wisconsin ..	25,616	Minnesota ..	34,601	Ohio	35,559	Penn.....	20,456
Pennsylvania	19,673	Iowa	31,154	Kansas.....	30,399	Indiana ...	20,294
Minnesota...	18,866	Missouri	24,967	Missouri	30,114	Illinois	19,061
Michigan ...	16,265	Wisconsin ..	24,885	Michigan ...	24,771	Missouri ...	18,499
Missouri	14,315	Pennsylvania	19,462	Pennsylvania	21,505	Michigan ..	15,238
New York ..	12,178	Kansas	17,324	Wisconsin...	11,699	Nebraska ..	14,787
Kentucky ...	5,729	Nebraska ...	13,847	Kentucky...	10,707	Iowa	13,655
Kansas	2,390	New York...	11,588	Nebraska ...	10,571	Kentucky..	9,501
Nebraska ...	2,125	Kentucky ...	11,356	New York ..	8,305	Wisconsin .	8,616
Dakota	171	Dakota	2,830	Iowa	8,250	New York .	7,301

[1] *Ninth Census: Industry and Wealth*, p. 83.

[2] *Tenth Census*, vol. iii. p. 177.

[3] *Report on the Statistics of Agriculture in the U. S. at the Eleventh Census*, p. 16.

[4] *Report of the Chicago Board of Trade*, 1895, p. 182.

At the beginning of the period under consideration New York and Pennsylvania held prominent places among the wheat-producing states, and the great wheat-raising states were for the most part on the southern shores of the chain of Great Lakes. By the middle of the eighties all this was changed and a large proportion of the surplus wheat grown in the United States was harvested in the far Northwest—the Dakotas and Minnesota being the principal wheat-growing states. The last column of the foregoing table discloses the present importance of these states, two of which produced no surplus wheat until the middle of the period under examination. The westward and northward movement of the wheat-raising areas has had a very decisive influence in the selection of the agencies employed in the movement eastward of the grain produced. When the grain to be shipped was raised in Ohio and Indiana, and in the southern portions of Michigan and Illinois, it was almost sure to go by rail, for in nearly all cases shipment by water would involve a short rail haul to the lakes with its high local rates, and in some cases, after the grain reached the lake, it would be only slightly advanced in its eastward journey by lake shipment. Charges of transshipment in the case of the short lake shipment would be of relatively greater importance than in the case of the longer lake shipment. In the early days the grain grown in the West was produced in regions or carried to places where the railroads were in a favorable position to compete for it. Most western wheat found its way to Chicago or Milwaukee. From these points the railroads possess a decided advantage over the lake carriers in the point of distance, for the latter must round the lower peninsula of Michigan while the former run directly across country to their destination. From Chicago to Buffalo by lake is 889 miles,[1] while the distance from Chicago to New York City by the shortest rail route is but 912 miles.[2] From Buffalo to New York

[1] *Eleventh Census: Transportation Business*, part 2, p. 290.

[2] Chicago to New York City over the Pennsylvania railroad. By rail the distances from Chicago to the different seaboard cities are as follows:

To Boston,	1000 miles
To Baltimore,	802 "

City by the shortest rail route is 410 miles.[1] It thus appears that every mile covered in the passage to Buffalo by lake results in an effective eastward movement of .564 of a mile. By the westward and northward movement of the surplus wheat-producing region the situation has been wholly changed. The districts which formerly produced a surplus that was almost certain to go by rail now grow but little if any more wheat than will satisfy their own necessities. But the location of the new wheat-growing areas is the important factor. These districts are located directly west of Lake Superior. This fact is clearly shown by the crop maps of the Eleventh Census:[2] the production of wheat in the far North has been greatly increased since these maps were published as will be seen by an examination of the table on page 359. As a result of this northward and westward movement of the wheat fields, the railroads have lost the advantage in the point of distance which they formerly possessed. By the shifting of the wheat-growing districts the lake carriers have been placed upon terms of substantial equality with the railroads. In shipping by lake from Chicago it was found that every mile traversed in the passage to Buffalo resulted in an effective eastward movement of but .564 of a mile.

Shipment by water from the head of Lake Superior is not accompanied by this wasteful expenditure of energy. Every

To Philadelphia,	822 miles
To Newport News,	896 "
To Norfolk,	984 "

—*Railroad Gazette*, vol. xxix. No. 13, p. 215.

[1] From Buffalo and Erie the distances to the seaboard ports by the shortest routes are as follows:

Buffalo to New York,	410 miles
Buffalo to Boston,	481 "
Buffalo to Philadelphia,	418 "
Buffalo to Baltimore,	402 "
Erie to New York,	512 "
Erie to Boston,	569 "
Erie to Philadelphia,	506 "
Erie to Baltimore,	490 "

—*Railroad Gazette*, p. 216.

[2] *Eleventh Census: Statistics of Agriculture*, Crop Map No. 13.

mile the grain is moved literally results in its being practically one mile nearer one of our great exporting ports.[1]

The increased importance of the shipments of wheat from the far Northwest in the receipts at Buffalo and Erie is made clear by the following table covering the movement of wheat through the St. Mary's Falls Canal.

MOVEMENT OF WHEAT.

(,000 omitted.)

Year	Movement through St. Mary's Falls Canal	Receipts at Buffalo and Erie	Year	Movement through St. Mary's Falls Canal	Receipts at Buffalo and Erie
1880	2,106	44,477	1891	38,817	83,749
1882	3,729	27,680	1892	40,995	86,085
1884	11,986	34,692	1893	43,482	71,578
1886	18,991	42,575	1894	34,869	52,450
1888	18,596	27,865	1895	46,218	49,033
1890	16,217	25,034	1896	63,256	60,054

By the above table it appears that the movement of wheat through the St. Mary's Falls Canal now just about equals the combined receipts of the two prominent lower lake ports—Buffalo and Erie. Were the receipts of the lower lake ports no larger than the shipments from the lake ports other than those of Lake Superior, the receipts of the selected Atlantic ports would have much more than held their own with the receipts of Buffalo and Erie. A comparison upon this basis would be worthless, however, because the whole situation has changed. That the railroads are less able to compete with the lake route than formerly cannot be inferred from a comparison of the receipts

[1] In comparison with certain rail routes, however, the lake route from the head of Lake Superior does not appear in this favorable light. Either the Duluth, South Shore and Atlantic, or the Minneapolis, St. Paul, and Sault Ste. Marie in connection with the Canadian Pacific affords a much shorter line to a tide-water port (Montreal) than do the lakes and the railroads to any of our Atlantic ports. These all-rail lines may in the future effectively compete with the lake carriers in the transportation of grain to certain regions. It does not follow because these roads have not done so in the past that they will not do so in the future. The discussion of this point, however, would lead us too far afield and therefore it will not now be taken up.

of the lower lake ports and of the Atlantic ports, for the railroads never were competitors for the traffic of the far-off region which now produces the bulk of our surplus wheat. The existing status of the struggle between the railroads and the water lines will not be discussed further at this point.

The statistics for the transportation of flour show that the movement of this commodity very much resembles that of wheat. For the first three years (1868–1870) of the period under consideration the receipts at Buffalo and Erie were about one-fifth of those at the selected Atlantic ports. Then for several years, but not without occasional setbacks, the receipts at the seaboard ports gained on the receipts of the lower lake ports, until in 1877 the receipts of the former ports were more than ten times as large as those of the latter. After 1877 there was a reverse movement and in 1883 this had gone so far that the relations which obtained at the outset were about restored. During the next two years there was practically no change, but in 1886 the lake ports made a decided gain upon the seaboard ports, and in 1889 increased this gain so much that the receipts of the lake ports were more than one-half as large as those of the seaboard ports. Since 1889 there has been no change of note. The yearly alterations which took place are shown in the Appendix on page 418.

A strong resemblance in the movement of flour and of wheat will be noticed on comparing the figures (in the Appendix) covering the movement of flour with those presenting the movement of wheat. The general tendencies have been in the same direction, but the movement has not proceeded so far in the one case as in the other. The shifting of the surplus wheat-producing districts has been accompanied by a corresponding movement of the great milling centers. From 1878 Minneapolis has, with but few interruptions, steadily increased her output of flour, reaching the enormous total of 12,874,890 barrels in 1896. At the head of Lake Superior, in the cities of Duluth and West Superior, there has recently sprung up another important milling center.[1]

[1] The subjoined table will show the development of these two milling districts.

The milling industry has followed the wheat-growing region westward and northward to a large extent. From this it follows that the lakes are now in a more favorable position for competing for the flour traffic than formerly. That a large portion of the increased receipts of Buffalo and Erie originate in the Northwest is evidenced by the statistics of the flour moved through the St. Mary's Falls Canal.[1] The shipments from Minneapolis by the Minneapolis, St. Paul, and Sault Ste. Marie Railroad have the same effect, since the bulk of the flour carried by this road

ANNUAL PRODUCTION (BARRELS).

(,000 omitted.)

Year	Minneapolis[1]	Duluth[2]	Year	Minneapolis[1]	Duluth[2]
1878	941		1890	6,989	431
1880	2,052		1891	7,878	673
1882	3,176		1892	9,750	1,094
1884	5,318		1893	9,378	876
1886	6,168		1894	9,401	918
1888	7,057		1895	10,582	2,978[3]
1889	6,089	84	1896	12,875	3,120[4]

[1] *Reports of the Trade and Commerce of Minneapolis.*

[2] *Reports of the Trade and Commerce of Duluth.*

[3] The output of the Duluth and West Superior mills.

[4] Flour manufactured at "Head of the Lakes." *Review of the Trade and Commerce of Duluth*, compiled by the Duluth Chamber of Commerce.

[1] MOVEMENT OF FLOUR (BARRELS).

(,000 omitted.)

Year	Through the canal[1]	From Minneapolis by M. St. P. & S. S. M. R. R.[2]	Year	Through the canal[1]	From Minneapolis by M. St. P. & S. S. M. R. R.[2]
1880	524		1891	3,780	1,201
1882	344		1892	5,418	1,684
1884	1,248		1893	7,421	1,720
1886	1,759		1894	8,966	1,458
1888	2,191	931	1895	8,902	2,111
1890	3,239	1,157	1896	8,883	2,420

[1] *Statement of the Commerce through the St. Mary's Falls Canal*, a document prepared by MR. E. S. WHEELER, the government officer in charge of the canal.

[2] *Reports of the Chamber of Commerce of Minneapolis.*

is transshipped to lake vessels at Gladstone, a port on the northern shore of Lake Michigan.

It appears, then, that the shipments of flour through the St. Mary's Falls Canal plus the shipments of flour from Minneapolis by the Minneapolis, St. Paul, and Sault Ste. Marie Railroad are now about as large as the total receipts of Buffalo and Erie. For 1895 the former were actually larger than the latter.[1] This brings us to the main consideration. We find in the case of flour, as in the case of wheat, that the shifting of the places of production has placed the water carriers in a more favorable position to withstand the competition of the railroads. The lake carriers are no longer handicapped by an excessively circuitous route.[2]

In striking contrast with the movement of wheat and its manufactured product, flour, is the eastward movement of corn. It appears from the tables in the Appendix (page 419), showing the receipts of the selected lake and seaboard ports, that the receipts of these two groups of ports, although they have varied greatly during the period under consideration, have moved together and at about the same rate. From 1868 to 1876 the lake receipts were about one-half as large as those of the seaboard, then for a half dozen years the seaboard receipts gained somewhat upon the receipts of the lake ports. The year 1882 was, in some respects, anomalous; the receipts of the lake ports almost equaled those of the seaboard ports, the former being a little more than 24 millions of bushels and the latter somewhat more than 28 millions.[3] For the next four years

[1] This fact does not, however, throw discredit upon the method of approaching the problem of the general eastward movement of the several commodities under investigation, for the total shipments of flour from Minneapolis by the "Soo" railroad are not transshipped to lake vessels. And the receipts at Buffalo and Erie do not represent the total receipts of the lower lake ports as fully as the shipments through the "Soo" canal plus the shipments over the "Soo" railroad represent the shipments from the upper lake ports. It should also be remembered that at the outset I disclaimed all intentions of making an exact mathematical demonstration.

[2] For qualifications see note on page 362.

[3] The receipts of this year were far below the normal, and in this fact is to be found the explanation of the variation of the relation. Just why a small movement should affect the seaboard receipts more than the lake receipts will be shown later.

there were wide variations and from then (1887) the lake receipts, with the exception of 1892, were somewhat more than one-half as large as those of the seaboard receipts. During 1896 the seaboard receipts were more than double those of the lake ports, the former being 113.5 million and the latter but 54.7 million bushels.

The eastward movement of corn thus stands out in strong contrast with that of wheat and flour. In our investigation of these breadstuffs we found that after the opening of the eighties the transportation of these commodities by water gained very rapidly upon the movement by land and that at the close of the period the quantities received at Buffalo and Erie by water were practically equal to the total quantities received at the leading seaboard cities. The explanation of this divergence of tendencies is not far to seek. It is found in the fact that the shifting of the surplus corn-producing region has been westward, and not northward as well as westward—it has been along the parallels. Our surplus wheat, as was seen, is now largely grown in the far Northwest—in Minnesota and in the Dakotas. The great wheat fields are now back of Lake Superior and thus in a favorable position for the movement by lake of the crops gathered from them. These states have thus far produced but little surplus corn and will probably never produce much, as they lie almost wholly without the corn belt. In the southern portions of Minnesota and South Dakota corn can be grown successfully, but these areas are limited in extent. The great surplus corn region now lies to the west and southwest of the southern portion of Lake Michigan,[1] falling within the states of Illinois, Iowa, Missouri, Kansas, and Nebraska, and as a consequence, if corn is to go by water to the East it must be carried from the ports at the head of Lake Michigan on the circuitous journey around the lower peninsula of Michigan. The advantages of the rail lines running to the Atlantic ports, in point of distance, will not be further discussed, as this matter has already been dwelt upon.

[1] This is very clearly shown by Crop Map No. 9, *Eleventh Census: Statistics of Agriculture.*

As the surplus corn-producing region now lies to the southwest of the head of Lake Michigan rather than directly to the west of it, there has been a very decided tendency to ship corn for export by the all-rail lines to the South Atlantic ports, notably Baltimore, Philadelphia, Newport News and Norfolk. Shipments by the all-rail routes to these ports will probably increase. The distances from the corn-growing districts to the South Atlantic ports are less than to the North Atlantic ports. There is another reason, and a much weightier one, for the movement to the southern ports from Chicago. Philadelphia has a differential rate in its favor of two cents and the other ports one of three cents per 100 pounds, as compared with New York. When these differentials were agreed upon in 1882 they were given the southern ports to offset the advantage New York possessed in the matter of ocean rates. Since 1882, however, the situation has radically changed. New York has, in good part, lost the advantage she then possessed in the item of ocean rates, and thus the reason for the existence of these differentials has disappeared. The differentials, however, not only remain but have become much more effective than when adopted. Nominally the differentials remain as they were fixed in 1882, but really they are much higher than they were then. This is true because the rates have fallen very decidedly while the differentials have remained absolutely stationary. Had the differentials been fixed upon a sliding scale, falling as the rates fell, the southern ports would not have the advantage which they now possess. What might have been easily arranged in 1882 can now be brought about only by a serious struggle, and one which the northern trunk lines are not likely to make. The grain traffic is an important item to the southern roads, and they will wage a desperate struggle to retain it. This is fully recognized by the more prosperous northern roads which have a more profitable miscellaneous business. We have here a case of a wide difference in marginal utility of a certain traffic to two different sets of roads. The Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western — roads hungry for traffic — set a much higher

value upon the traffic in corn, which at best yields but a small profit, than do the New York Central and the Pennsylvania roads, whose terminal yards are already crowded, and can only be enlarged at a great outlay of money.

As these southern roads also tap the territory to the south and west of Chicago it may be expected that they will also, to an increasing extent, divert grain directly to the southern ports instead of permitting it first to go to Chicago and then to take it to those ports. A large portion of our surplus corn being produced in the territory to the south of Chicago, this diversion may seriously affect the corn trade of this city.

The table covering oats shows that its eastward movement differs widely from that of each of the other commodities considered. For the first four years of the period under investigation, namely, 1868 to 1872, the receipts by lake at Buffalo and Erie were almost equal to one-half the receipts of the eight selected Atlantic ports, the former being 33.8 million and the latter 68.5 million bushels. Beginning with the year 1872 the receipts of the lower lake ports not only declined relatively, but even absolutely, and in the year 1880 reached the very small aggregate of 654,350 bushels. For the next four years the receipts were somewhat larger, but in 1885 they again fell very low, almost reaching the small amount received in 1880. The receipts at the Atlantic ports, on the other hand, steadily rose from 23.7 millions in 1880 to 40.4 millions of bushels in 1885. In 1886 the lake receipts increased slightly and those of the seaboard ports fell off somewhat. Since 1886 the receipts of the lake ports have grown much more rapidly than those of the Atlantic ports, the receipts of the former ports for 1896 being 40.5 million, and those of the latter 78.9 million bushels.

While investigating the transportation of wheat and corn it was found that the shifting of the great producing areas was a factor of prime importance in determining the route by which the crops would go to market. In the case of oats the movement was very largely westward and but slightly northward, so the situation has not been so greatly changed as in the case of

wheat. Most of the surplus oats is now grown in territory directly west of Chicago. There has been, however, something of a northward movement of the oats-growing districts, and the shipments by the northern routes—by lake from the head of Lake Superior and by the Minneapolis, St. Paul and Sault Ste. Marie Railroad—have increased very rapidly, and in no small measure explain the unusually large receipts at Buffalo and Erie in 1896. It may be expected that shipments over the northern lines will increase largely, and therefore Chicago may lose the prominent position she has long maintained in the handling of this grain.

IV.

THE TRAFFIC THROUGH THE GULF PORTS.

Not only have the east-and-west trunk lines diverted traffic from the lakes, but so have also the Mississippi River and the railroads leading to the gulf. This southern movement, however, never assumed large proportions until the year 1896; and for this year the increased traffic was largely accounted for by the increased movement of corn. Our total exports of corn last year having been unusually large, it may be supposed that the sudden prominence of the gulf ports[1] in the shipment of grain is ephemeral. But such a view is hardly justifiable. If the Mississippi River were the only competing route to the gulf ports the southern route would perhaps not greatly encroach on the traffic now moving over the lakes and the east-and-west trunk lines. But the Mississippi is no longer the only line seriously competing with the great east-and-west routes to the Atlantic ports. The railroads leading to the gulf are in certain sections competing with the great east-and-west routes. As regards the railroads east of the Mississippi River, this is especially true of the Illinois Central, which has recently completed very excellent terminal facilities at New Orleans for hand-

[1] For the exports from the leading two gulf ports, New Orleans and Galveston, see Appendix, p. 420. The exports rather than the receipts are given, because the former alone represent competitive business.

ling grain. The small export movement of grain via New Orleans in past years has been largely due to the inadequate terminal facilities at that point. Although there may be an increased grain traffic over the Illinois Central, this enlarged business will not be at the expense of the lake route. Grain grown in the territory but a short distance south of Chicago and east of the Mississippi River does not go east over the lake route, for this is effectually prevented by the high local rates for the short haul to the lake ports. It need hardly be said that if the lakes cannot monopolize the flour and grain traffic from points situated immediately upon the lakes, such as Chicago and Milwaukee, they cannot successfully compete for the shipment of these commodities from points south of Chicago. The senate select committee appointed in 1872 "to investigate and report upon the subject of transportation between the interior and the seaboard" took the position that "the railroad interests practically control the transport of grain from all that part of the states of Illinois and Indiana situated south of a latitudinal line sixty miles south of Lake Michigan."[1] The railroad interests here referred to did not include the railroads running to the gulf but merely the lines running to the seaboard. The grain produced in the region some little distance south of Chicago has been and in all probability will continue to be carried to the Atlantic ports. The railroads leading to the gulf have no advantage over some of those running to the Atlantic in point of distance;[2] and as ocean freight rates to European ports are materially higher than those from Atlantic ports, and as the gulf railroads obtain but little return freight, it is difficult to see

[1] Report of the Select Committee on Transportation Routes to the Seaboard, p. 24 (XLIII Congress, first session). Mr. Windom was chairman of the committee.

[2]

From Chicago to New York,	912 miles
From Chicago to Philadelphia,	822 "
From Chicago to Baltimore,	802 "
From Chicago to Newport News,	896 "
From Chicago to New Orleans,	926 "

The Railroad Gazette, quarto vol. xxix. No. 13, p. 215. The distance to New Orleans is that given by the time table of the Illinois Central Railroad, and is the distance over that line.

how these lines are going to draw traffic in the territory east of the Mississippi River and north of St. Louis from the northern trunk lines, and it is still much more difficult to understand how the south-bound lines will encroach upon the traffic which has gone over the lakes. The south-bound lines have easy grades and are not troubled with snow and ice, but these advantages are not sufficient to offset the disadvantages under which they operate.

The movement of flour and grain from the regions west of the Mississippi presents an entirely different problem. In this territory the railroads leading to the gulf will undoubtedly carry a great deal of grain to the gulf ports that formerly went to the Atlantic ports over the rail-and-lake route and the all-rail lines. Roughly speaking, the grain grown in the territory north of the east-and-west line passing through the southern boundary of Iowa will continue to go over the eastern rail and water lines. And probably the grain produced in northwestern Missouri will continue to move over the old routes. On the other hand, the grain grown in Missouri south of the Missouri River and in the southern half of Kansas and in all the region lying south of these two states, is equally sure to go, if intended for export, by the south-bound lines to the gulf. Between these two regions lies a district of debatable territory formed of the northern half of Kansas, the southern part of Nebraska, the extreme southwestern part of Iowa, and of northwestern Missouri. This region includes much of the best agricultural land of the country west of the Mississippi River. It may therefore be expected that the eastern lines will not relinquish the traffic of this territory without a struggle. As the railroads leading to the gulf have erected or are erecting terminal facilities for the handling of grain on a large scale, particularly at their southern termini, they may be expected to wage a spirited contest for the traffic of the disputed territory, and as a consequence grain rates to the Atlantic seaboard and to the gulf will probably fall in the near future. The most southern of the east-and-west trunk lines belonging to the Central Traffic Association have been

forced by the association to maintain rates, and as a result they have seen much of the traffic which they at one time handled go to the gulf by the river-and-rail lines. The southern lines of the Central Traffic Association did not regard this traffic as valuable enough to warrant them in breaking loose from the association, and the association preferred to lose some traffic to the gulf lines rather than reduce rates on all east-bound traffic to such a point as would prevent grain from the southern limits of their territory from finding an outlet through the gulf ports. Although the Central Traffic Association viewed with equanimity the diversion of a portion of its traffic to the gulf ports it does not follow that the association will much longer permit the diversion to the gulf ports of the traffic originating in the territory which has supplied the railroads forming the association with much of their east-bound freight. Up to the present time the rail-and-water lines and the all-rail lines to the Atlantic seaboard have regarded themselves as the natural heirs to the whole of the traffic originating in or destined for the entire West. To the lake carriers and the managers of the east-and-west trunk lines the westward course of empire has always presented itself as new traffic for them. For many years there has been an increasing tendency for commerce to move on east-and-west lines. The opening of the Erie Canal in 1825 gave the first decisive impulse to commerce to move across the country instead of down the Ohio and Mississippi rivers. In later years the construction of the great trunk lines, parallel to the northern water route formed by the Great Lakes and Erie Canal, strengthened a movement which had already become firmly established. On the Atlantic seaboard New York and Philadelphia have come to be looked upon as the natural outlets and inlets for the commerce of the whole country; and, in a like manner, Chicago, by reason of its favored position on the lakes and its excellent railroad facilities, has come to be viewed as the natural distributing and receiving point for the entire West.

This idea, that Chicago was to be the gateway through which the commerce to and from the West would move, received a

severe shock some years ago. As the farmer has pushed westward and still farther westward it has become easier and easier to make a flank attack upon the old lines of commerce. This has been rendered doubly easy where the new regions settled have been either north or south of the great east or west line of movement. It has already been shown how with the westward and northward migration of the wheat fields the wheat and flour traffic avoided Chicago and sought the more northern routes. Most of this business still goes through our chief Atlantic ports, but with the rapid enlargement and improvement of Canadian transportation facilities now in progress it will be surprising if Canadian ports, notably Montreal, do not secure a larger portion of the export grain business.

Let us now return to the movement of flour and grain through the gulf ports. The old east-and-west routes have recently been brought face to face with a new and serious situation in the central West and Southwest. The lines extending northward from the gulf are not disposed to allow the east-and-west lines to control this great traffic of the trans-Mississippi region. The gulf roads hold that the central west and southwest should export their surplus products through the gulf ports and receive imports through the same cities. This proposition is nothing short of revolutionary — it means a breaking away from the old channels of shipment through Chicago and New York and other eastern cities; further, it means that the northern water route and the eastern trunk lines are no longer to be the dominant power in moving the products of western farms. During the past year the railroads running to the gulf have been increased in number by the construction of the short line — the Kansas City, Pittsburg and Gulf Railroad.[1] This line, which was designed to make Kansas City independent of the eastern routes, extends from Kansas City almost due south to Port Arthur (Texas) at the head of Sabine Lake, an arm of the gulf. In the contest with the east-and-west lines this route will be found in the van. The distance to tide water from Kansas City is

[1] It is commonly known as the Port Arthur route.

much less by the Port Arthur route than by the eastern rail routes, and therefore very much less than by the way of the Great Lakes.[1] But too much must not be expected from this route simply on the ground of its being much shorter than the eastern lines to tide water. It need hardly be said that cost of service does not vary as the distance, and that rates are not fixed on a mileage basis. Easy grades, straight tracks, a large traffic in both directions, and cheap fuel are fully as important as the question of distance. So far as the first two items are concerned the Port Arthur route will compare very favorably with any of the eastern trunk lines; it can also secure fuel as cheaply as most of them. In respect to the remaining point, however, the eastern trunk lines have the advantage. Not only will the traffic over the new line be much less, at least for some time, than over the eastern trunk lines, but it will also be very largely in one direction unless this particular road is more successful in securing northbound traffic than the other gulf roads. If no freight can be found for the cars going north, the traffic going south must pay the cost, not only of its own movement, but that of hauling back the empty cars as well. It must be admitted that the outlook for this road securing a double haul is better than that of most, if not all, of the other railroads running north from the gulf. The Port Arthur route passes through some of the best timber land on the continent, and it may, therefore, confidently expect a large north-bound traffic in ties and lumber. As it passes through two large coal fields it may also hope to move large quantities of coal. Aside from these main items the managers of this line expect to haul a portion of the imports consumed in the territory tributary to their railroad and

[1] The following table of short line rail distances from Kansas City will make this clear:

From Kansas City to New York	1303 miles
From Kansas City to Philadelphia	1228 "
From Kansas City to Baltimore	1198 "
From Kansas City to Galveston	799 "
From Kansas City to Port Arthur	767 "

—*Manufacturers' Record*, February 19, 1897, p. 2.

also hope to develop a considerable traffic in early fruits and vegetables.

But even supposing that the Port Arthur route can haul grain from Kansas City to the gulf for less than the east-and-west roads can carry it to the Atlantic seaboard, can this line develop a large export business? Are there not adverse circumstances which will fully counterbalance the advantage of a low rate to the gulf? Will not higher ocean rates from the gulf ports and the unfavorable climate of the gulf region prevent the growth of a southern export movement? In answer to the first of these questions it may be said that ocean rates are less unfavorable from the gulf ports now than they were formerly, and that as the amount of freight which is being offered to vessels is increasing, there will be more steamship lines to southern ports and rates will be still further lowered. At this late day it is hardly necessary to answer the second question. The large amount of capital which has recently been invested in southern terminals for handling grain, by persons familiar with the climate, and the immense movement of grain through gulf ports during the year 1896 ought to be sufficient proof that the gulf climate does not rise as an obstacle to prevent the development of an export trade through the gulf ports.

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NOTES.

THE publication of the results of the last quinquennial census of France, taken in the year 1896, gives renewed evidence of the almost stationary state of French population. The total population for the eighty-seven departments included in the enumeration is 38,517,975, showing a gain of 175,027 on the year 1891, and of 299,072 for the decade 1886–1896. But the real situation is only partly disclosed in these totals. For only twenty-four of the eighty-seven departments show any increase, the remaining sixty-three having experienced an actual decline of numbers, aggregating over 385,000, as compared with 1891. The explanation of this phenomenon is the continued drift of population from the rural districts toward the larger centers. Cities of over 30,000 inhabitants show an aggregate gain of 327,000, the three cities, Paris, Lyon, and Marseilles alone being credited with almost half this increase.

THE powerful impulse that was given to the income-tax movement in France a year ago by the energetic efforts of the Bourgeois-Doumer ministry seems in a fair way of accomplishing some substantial changes in the French system before long, despite the strong opposition that was developed in certain quarters against the two ministerial propositions of last year. The present minister of finance, M. Cochery, who failed last year to secure the adoption of his scheme for the reorganization of the *impôt sur les revenus* so as to include the income of public securities, both French and foreign, has so far modified his plan of action that his pending proposition is limited to a single feature of what he regards as the general problem of taxation in France. The advantage of an income tax arranged according to schedules he finds in the facility it gives for dealing with the several parts of the problem separately, thus making progress more certain and rapid. "But," his exposé recites, "we do not intend to give up the realization of important fiscal reforms. The equalization of the tax on immovable and movable wealth appears to us always to be the end to pursue." In a word, a step is to be taken toward taxation according to faculty.

The present proposition touches the land tax, the personal tax, the door and window tax, and the urban real-estate tax. The main object to be accomplished is the alleviation of the burden on the rural population. (1) Land is to be relieved by the exemption of mortgage indebtedness, this part of the tax to be paid henceforth by the mortgagee; and one-fourth of the present principal sum of the land tax is to be relegated by the state to the use of the communes. The resulting deficiency in the national revenue is to be made up by a more vigorous collection of the taxes on foreign securities held in France and by an increase of rates on certain transactions in stocks. (2) The personal tax, the present assessment of which is avowedly defective and irrational, is to be improved by adding to the test of rental value of dwelling occupied certain other indications of well-being. Account is to be taken of the number of domestics, horses, carriages, etc. Large abatements are to be allowed in the case of large families, and a minimum rental value, varying according to the population and importance of the commune, is to be exempt in all cases. It is expected that the effect of these provisions will be the exemption of six and one-half, out of a total of ten and one-half million, households from the tax. (3) Steps are to be taken toward the ultimate suppression of the door and window tax, by an immediate reduction of the amount of the tax to the extent of 16 million francs, to be made good, chiefly, by an increase of the rate of the house tax.

Such are the leading features of a measure which, if adopted, is likely to lead to more thoroughgoing changes in the future. Its scope is conservative and restrained within the general lines which have limited the development of French taxation in this century. But it is interesting as an indication of the extent to which the modern tendency toward an adjustment of the burdens of taxation to the relative capacities of different classes, whether by the forms of the income tax or not, is operative even in a country of such remarkable financial conservatism as France.

THE introduction into the special session of Congress of bills for the increase of customs duties has had its influence upon our gold reserve and consequently upon the stability of our currency. The fear of higher duties has in the last few months stimulated imports enormously with the purpose of obtaining supplies under the present lower duties. Up to April our exports had exceeded our imports as never

before in our history, with the accompanying effect of setting towards us the stream of gold which has filled up the treasury and the banks. But to the extent that imports have been artificially stimulated, will gold be kept here with difficulty. Already some gold has gone abroad, and the treasury reserve of gold has fallen by about ten million dollars. Even though increasing imports of merchandise increase the government revenues and thus diminish the deficit, yet we have the quick and sensitive record on the treasury reserve of the slightest change in our international trade. This shows unmistakably that the treasury reserve and our currency system are at the mercy of a favorable or unfavorable balance of trade, and that even when the deficit is diminishing the reserve may fall. And yet we have been told that the reserve was solely dependent on revenue sufficient to prevent a deficit. May it not be that the eagerness to pass a new tariff bill, under the guise of a measure to wipe out the deficit, has other objects in view than a sincere desire to protect the gold reserve and the stability of our currency?

THE GOLD STANDARD IN JAPAN.

THE existing coinage of Japan is theoretically bimetallic, but actually monometallic. In 1871 the gold standard was adopted, the standard coin being the 20-*yen* piece containing 514.4 grains of gold, nine-tenths fine (or 462.96 grains pure gold), whereby the unit, or *yen*, would contain (if coined) 25.72 grains standard gold, nine-tenths fine (or 23.148 grains pure gold). The issues of depreciated paper, however, prevented gold from circulating. In May 1878 a silver *yen* of 416 grains standard weight (or 374.4 grains pure silver) was ordained to be a full legal tender equally with gold for all debts public and private. By law, therefore, a bimetallic system of coins was thus created at a ratio of 16.13 to 1. On the resumption of specie payments for notes, January 1, 1886, naturally silver was the cheaper and only metal used. Thereafter Japan has had in fact only a silver basis for all her currency and trade, the silver *yen* being today worth about 46.8 cents in United States gold coin.

The paper money consists of national bank notes (issued after the American system), government notes, and notes of the Central Bank (Nippon Ginko) which will soon supersede all national-bank issues. At the end of January 1897 the circulation[1] stood as follows:

[1] *Japan Daily Mail* (Yokohama) March 3, 1897.

	Yen
Circulation (incl. reserves in national and private banks):	
Gold coin,	12,872,187.600
Silver coin,	73,355,844.940
Nickel and copper coin,	15,551,608.995
	101,779,641.535
Reserve in Nippon Ginko:	
Gold,	36,776.600
Gold bullion (receivable end of May from Chinese indemnity against issues of convertible notes)	72,623.856
Silver coin and bullion,	49,040,841
	158,441.297
Note circulation:	
Government notes,	9,217,147.750
National bank notes,	16,464,289.000
Nippon Ginko notes,	190,519,446.000
	216,200,882.750
Total specie and notes in circulation	317,980,524.285

This monetary system, based on the changing value of the silver *yen*, has been examined recently by an investigating commission, which reported last year (1896), by a vote of six to one, that no necessity existed which required an immediate change of standard, but they unanimously favored such a change whenever a suitable opportunity should present itself. And to the minds of the Matsukata Cabinet the present time, just after the Chinese War, accompanied by the payment of an indemnity, seemed opportune. The immediate but superficial difficulty was, of course, the fluctuating rate of exchange between their silver currency and the gold currency of countries with which Japan carried on 70 or 80 per cent. of her foreign trade. But another and more pressing reason appeared in the necessity of obtaining foreign loans. The national expansion due to the increase of industry in the last few years and to the triumph over China demanded more capital than the home market could supply. Yet, as with us, Japan could not obtain loans at a low rate of interest if her bonds were payable in silver. These, however, were probably only superficial reasons for the proposed change of standard. It is to be observed that the position of Japan is strikingly like that of Germany after the Franco-Prussian War—in receipt of a large war indemnity, and eager to gain a foremost place among commercial nations. And for this a standard fluctuating less

than silver was seemingly a desideratum. But, whatever the reasons, in February 1897 it was given out that the government proposed to present measures leading to the adoption of the gold standard; and early in March a new currency law[1] was submitted to the Diet, as follows:

The following is a translation of the new currency law submitted by the government to the Diet:

ARTICLE I.—The power of minting and issuing coins belongs to the government.

ART. II.—A weight of 2 *fun* (11.574 grains T.) of pure gold shall be the unit of coinage, which shall be called a *yen*.

ART. III.—The varieties of coin shall be as follows:

GOLD COINS.

Pieces of 20-*yen*, 10-*yen*, and 5-*yen*.

SILVER COINS.

Pieces of 50-*sen*, 20-*sèn*, and 10-*sen*.

NICKEL COINS.

Pieces of 5-*sen*.

COPPER COINS.

Pieces of 1-*sen* and 5-*rin*.

ART. IV.—The decimal system shall be adopted for purposes of currency calculation. The hundredth part of a *yen* shall be called a *sen*, and the tenth part of a *sen* shall be called a *rin*.

ART. V.—The composition of the coins shall be as follows:

GOLD COINS.

900 parts of pure gold to 100 parts of copper.

SILVER COINS.

800 parts of pure silver to 200 parts of copper.

NICKEL COINS.

250 parts of nickel to 750 parts of copper.

COPPER COINS.

950 parts of copper; 40 parts of tin, and 10 parts of zinc.

ART. VI.—The weight of the coins shall be as follows:

	Momme	Grams
The 20-*yen* gold	piece=4.444	(16.6665)
The 10-*yen* gold	piece=2.222	(8.3333)
The 5-*yen* gold	piece=1.111	(4.1666)
The 50-*sen* silver	piece=3.5942	(13.4783)
The 20-*sen* silver	piece=1.4377	(5.3914)

From the translation given in the *Japan Daily Mail*, March 3, 1897.

The 10-*sen* silver piece=0.7188 (2.6955)
The 5-*sen* nickel piece=1.244 (4.6654)
The 1-*sen* copper piece=1.9008 (7.1280)
The 5-*rin* copper piece=0.9504 (3.5640)

ART. VII.—Gold coins shall be legal tender to any amount. Silver coins shall be legal tender to the amount of ten *yen*. Nickel and copper coins shall be legal tender to the amount of one *yen*.

ART. VIII.—The dimensions of the coins shall be fixed by imperial ordinance.

ART. IX.—The legal remedy of fineness shall be $\frac{1}{1000}$ in the case of gold coins, and $\frac{3}{1000}$ in the case of silver coins.

ART. X.—The legal remedy of weight shall be as follows:

20-*yen* gold coin; 0.00864 *momme*
(0.0324 gram); or 0.83 *momme*
(3.1125 grams); in 1000 pieces.
10-*yen* gold coin; 0.00605 *momme*
(0.02269 gram); or 0.62 *momme*
(2.325 grams) in 1000 pieces.
5-*yen* gold coin; 0.00432 *momme*
(0.0162 gram) or 0.41 *momme*
(1.5375 grams) in 1000 pieces.

In the case of the silver coins, legal remedy of weight shall be 0.02592 *momme* (0.0972 gram) for each piece; or 1.24 *momme* (4.65 grams) in each 1000 pieces of 50-*sen*; 0.83 *momme* (3.1125 grams) in each 1000 pieces of 20-*sen*; and 0.41 *momme* (1.5375 grams) in each 1000 pieces of 10-*sen*.

ART. XI.—The minimum circulating weights of the gold coins shall be as follows:

	Momme	Grams
20-*yen* gold coin	4.42	(16.575)
10-*yen* gold coin	2.21	(8.2875)
5-*yen* gold coin	1.105	(4.1438)

ART. XII.—If, in consequence of friction from circulation, any of the gold coins fall below the minimum circulating weight, or if any of the silver, nickel, and copper coins become visibly reduced owing to the same cause, or if any coins become inconvenient for purposes of circulation, the government shall exchange such coins for others of the same face values without making any charge.

ART. XIII.—If the design upon a coin becomes difficult to distinguish, or if it has been privately restamped, or otherwise defaced, it shall be regarded as unfit for circulation.

ART. XIV.—Should any person import gold bullion and apply to have it minted into gold coin, the government shall grant the application.

ART. XV.—The gold coins already issued shall circulate at twice the rate of the gold coins issued under the provisions of this law.

ART. XVI.—The silver 1-*yen* coins already issued shall be gradually exchanged for gold coins, according to the convenience of the government, at the rate of one gold *yen* for one silver *yen*.

Pending the completion of the exchange referred to in the last paragraph, silver 1-*yen* coins shall be legal tender to an unlimited extent, at the rate of one silver *yen* for one gold *yen*; and the suspension of their circulation shall be announced six months in advance, by imperial ordinance. Any of these coins not presented for exchange within a period of five full years, reckoned from the day on which their circulation is suspended, shall be regarded henceforth as bullion.

ART. XVII.—The 5-*sen* silver coins and the copper coins already issued shall continue in circulation as before.

ART. XVIII.—From the day of the promulgation of this law the coinage of 1-*yen* silver pieces shall cease; but this restriction shall not apply to silver bullion entrusted to the government for coinage prior to that day.

ART. XIX.—All previous laws or ordinances conflicting with the provisions of this law are hereby rescinded.

ART. XX.—With the exception of Art. XVIII, this law shall go into operation from the 1st day of the 10th month of the 30th year of *Meiji* (October 1, 1897).

The pith of the plan resides in accepting the existing standard and adapting the value of the new gold coins to it. Since resumption in 1886 all prices and contracts have been expressed in terms of silver, and the considerable decline in the gold price of silver since 1886 has given Japan a depreciating standard, silver having fallen at least 34 per cent. by 1895, as compared with gold, while general (European) prices since 1886 have fallen only 3 per cent. by 1895 as compared with gold.[1] The silver standard of Japan, therefore, as compared with commodities has depreciated about one-third. By the new scheme present conditions are accepted (the ratio being 1 : 32.34), the gold coins are reduced to conform in general to the present value of the silver *yen*, but henceforth a fall in the value of silver will produce no effect on her standard of payments. The gold *yen* will be the unit

[1] The average gold price of silver per ounce in 1886 was $45\frac{3}{16}^{d}$ and only $29\frac{7}{8}^{d}$ in 1895, a fall of 34 per cent.; while Sauerbeck's index number for 1886 was 64, and 62 in 1895, showing a fall of general prices of slightly more than 3 per cent.

and will contain 11.57426 grains, Troy, of pure gold (instead of 23.148 as formerly).

In order to establish the gold standard in fact as well as in law, there must be provided by the issuers a gold reserve sufficient to redeem the note circulation in gold; and the outstanding silver *yen* pieces must be protected in case of future depreciation. The silver 1-*yen* coins, meanwhile, are an unlimited legal tender (see Art. XVI), and as soon as a divergence exists between their bullion and their coinage value silver will tend to drive out gold. But their further coinage is stopped, and an exchange of silver *yen* for gold *yen* will maintain the silver coins at par just as certainly as the note-issues are maintained at par by redemption in gold. Doubtless the whole issue of silver *yen* pieces can be kept in circulation without requiring a large reserve. The certainty of redemption in gold is all that is needed to prevent its presentation. The government, moreover, will have five years in which to exchange the silver for gold.

The chief objection urged in Japan against the new scheme is based upon the belief that the country has been made rich by the steadily cheapening of the standard in terms of gold. (It had also been cheapened relatively to goods, as shown above.) If the gains of Japan are to be ascribed to silver, then why has not China prospered equally well on her silver standard? Indeed one is likely, in the plurality of causes operating upon a country's general progress, to err, if the awakening commercial energy and intelligence be overlooked, and if emphasis be put solely upon such a matter as the media of exchange. If Japan can successfully compete with other nations by reason of a low cost of production, that fact will not be changed by using either silver or gold as a medium of exchange.

J. LAURENCE LAUGHLIN.

BOOK REVIEWS.

Outlines of Economic Theory. By HERBERT JOSEPH DAVENPORT. New York: The Macmillan Company, 1896. 8vo, pp. xii + 381.

THE present period is a transitional one for makers of books on political economy. Essential parts of old theories have been abandoned; and yet of the theories that are to take their places, no one has as yet won universal acceptance. Even the theory of value is still incomplete; and the laws of distribution are the subject of active research and controversy. They are not reduced to a form in which they may claim admission to the list of known and accepted truths.

Under these conditions a service that may fairly be demanded from a new work on economics is that it shall place its readers in touch with that recent thought out of which the coming science of political economy is evolving. This service Mr. Davenport has rendered. His view is a modern one, and he has supplemented it by quotations from other writers. These are massed at the end of the several chapters; and they serve as a stimulus to thought on the part of the reader, by inviting him to decide between the views presented. In another way also is the thought of the reader stimulated; for the chapters are followed by lists of questions, the answers to which must carry the student beyond the chapters themselves, and force him to perceive the bearings of what the author has said.

In its arrangement the work discards the traditional division into four parts treating, respectively, of Production, Distribution, Exchange, and Consumption. What is formally said of consumption is found in the second part of the book, which is devoted to Economics as an Art. In reality, however, that analysis of utility which is the basis of the theory of value is a part of what would naturally fall within a theory of consumption. Moreover, what the author says concerning production is scattered through chapters that have different headings.

For these reasons the book is not what is usually expected in a text-book. It was not designed primarily as a book for introductory

classes. That method of teaching which consists in placing a very simple and elementary work in the hands of pupils, and reducing the teacher to the function of, as it were, tending the text-book as a mechanic would tend a nearly automatic machine, cannot be adopted with Mr. Davenport's book. In the hands of a proficient teacher it may be made to carry the thought of the pupil deeper into the mysteries of economic science than the simple books carry him.

In so far as the work takes issue with the views of such writers as those of the Austrian group, and those of the American group, which is not identical with the Austrian, a point of interest is the author's analysis of value. He bases it on sacrifices, but not on the sacrifice that consists in effort directly expended in producing the thing valued. Value is "the measure of the sacrifice—generally in utility, possibly in effort involved through exchange in obtaining utility." The practical topics that occupy the concluding part of the volume are treated in a way that students will find very helpful.

JOHN B. CLARK.

The History of Economics. By HENRY DUNNING MACLEOD. New York: G. P. Putnam's Sons, 1896. 8vo, pp. xv+690.

LITTLE interest attaches to this book other than that which it derives from the well-known eccentricities of its author. The circle of ideas with which the name of Mr. Macleod has been identified for the past forty years has undergone little change or expansion in this latest volume. It has no new message to deliver, nothing is said that has not been said elsewhere and many times, by the same author, in the same language and in the same type. The book is misnamed; it is not what an intelligent reader expects to find under the title of "History of Economics." It is historical only so far as it is Mr. Macleod repeating himself. Of its 690 pages, but 130 deal with the history of economics, and these are largely autobiographical. Quesnay, Smith, Say, Ricardo, and Mill serve as a convenient background for exhibiting in its true proportions the inestimable service of Mr. Macleod to mankind and to science. That economic science has not acknowledged its indebtedness does not disturb Mr. Macleod. It is true, for all that, that Smith, Ricardo, and Mill "butchered" the science and that the author "originated" it in its modern form.

A. C. MILLER.

German Social Democracy. Six lectures by BERTRAND RUSSELL. With an Appendix on Social Democracy and the Woman Question in Germany by ALYS RUSSELL. London: Longmans, Green & Co., 1896. Pp. xiv + 204.

THIS little book is issued in the series of the London School of Economics and Politics and is typical of the original work being done by the faculty of that new and unique English institution. The book deserves a word of approbation in the first place for its form. A good table of contents and an excellent index fit it for use as a text-book. In the second place one is immediately impressed with the vantage ground of the author. Mr. Russell, a fellow of Trinity College, Cambridge, and recently lecturer on geometry at Bryn Mawr, approaches his subject from the philosopher's point of view. His estimate of social-democratic materialism is the best possible introduction to a study of the followers of Marx.

It is Marx's materialism which gives to the movement which he founded its peculiar form and programme. Since mind has been produced by matter, its ultimate motives for action are to be found in material things; the production of these is, accordingly, the moving force which underlies all human phenomena. This transition is nowhere clearly set forth, and is obviously incapable of logical proof, but the outcome of it is this, that all human institutions and beliefs are ultimately, in the last analysis, the outcome of economic conditions, that is, of production and exchange of material things. . . . . Religion, science, the state — in short, all branches of human activity — are, in the last resort, determined by economic causes (p. 7). [Ricardo was Marx's master.] The England of 1840–1870 has therefore become to the social democrats what the land of Canaan was to the Covenanters — the land from which all illustrations are drawn. . . . . The shrewd Lancashire manufacturer to him, as to the Manchester school, is the type of all mankind; for social democrats who quote their facts more often from Marx than from life, this overweening influence of English conditions has, I think, been a source of much confusion and false judgment (pp. 8, 9).

Marx's two great doctrines relate to "surplus value" and "the concentration of capital." The pages on the theory of value are summed up by Mr. Russell as follows:

Ricardo proved that, in a state of free competition, the value of commodities, whose quantity can be indefinitely increased without increasing the cost of production, is measured by the cost of production; for this is the highest value at which the seller is sure of not being undersold. But Marx

says: Not cost of production, but labor-time measures value. By some impalpable metaphysical compulsion the capitalist must sell the product of twelve hours' normal labor for a value represented by twelve, though the cost of production is only represented by six. Why, under the circumstances, the capitalist is not forced by competition to reduce his price Marx does not attempt to explain. Ricardo has sometimes spoken of value as measured by labor-time, because he assumed that, apart from interest, cost of production consisted of wages, and wages were paid by the time. But Marx regards wages as purchase of labor-power, not of labor-time, and thus no reason remains why value should be measured by labor-time. . . . . It must also be observed that where cost of production depends on quantity produced—as it must do whenever Marx's other law, of the concentration of capital, holds good—there cost of production is formally inadequate to determine value. For with different values there will be different amounts demanded, consequently different amounts produced and different costs of production. . . . . The total neglect of demand as an economic force is a necessary consequence of the materialistic view of history. For, on this view, material things govern man and all his institutions, and this government is exerted through the agency of blind "productive forces." Production, therefore, is the fundamental fact, and demand is a mere consequence of it. . . . . The necessity for taking demand into account, destroys not only Marx's theory of value, but the whole materialistic theory of history. . . . . At this point it is customary for the self-satisfied German bourgeois to sing a pæan of triumph, and leave socialism to be devoured by its inconsistencies (pp. 19–24). [This is purely pedantic.] It is self-evident, since some men live in idle luxury, that a laborer normally produces more than he consumes, and that this surplus goes to support idleness. . . . . It comes about, in economic language, by monopoly rent; whenever the man or company of large capital is able to produce more easily than the man of small capital, he is able, since large capitals cannot be indefinitely increased at will, to obtain a rent from his advantage, just as the landlord obtains a rent from the superiority of his land to the worst land in cultivation (p. 25).

Marx's second law of the concentration of capital is fundamental to his interpretation of socialism.

If, as Marx seems to suppose, every single business were in the hands of a single capitalist, then though all the rest of Marx's economic theory should be proved to be false, the sudden revolutionary change from private capital to collective management would seem inevitable. . . . . But three points must be noticed in this process, which make it very different from the process suggested by Marx: (1) Big firms consist normally of companies, and their victory does not therefore necessarily diminish the number of individual capitalists; (2) a new middle class is created by large firms and the use of

machinery, *e. g.*, foremen, engineers, and skilled mechanics, and this class destroys the increasingly sharp opposition of capitalist and proletariat on which Marx lays so much stress; (3) the profitable management of businesses by the state presupposes a certain degree of development, and should therefore be undertaken at different times in different businesses, not, as Marx supposes, by a single revolutionary transformation. . . . . But, in agriculture, where the law of diminishing returns prevails, the whole development is totally different from that of industry. . . . . The economic size of a farm is not in its acreage, but in the capital laid out on it. In this sense many great farms of western America may be smaller than a suburban market garden. . . . . Again, agricultural skill consists chiefly of special local knowledge of peculiarities of the soil, etc., and in this a small farmer is likely to have an advantage; . . . . but it is evident that none of the above arguments have any force against the proposal for state ownership of land. For this proposal, as everyone knows, the arguments are, if anything, stronger than for any other collectivist measure, yet the peculiar form of Marxian socialism makes all these arguments logically inaccessible to German social democracy (pp. 35–38).

The second chapter is devoted to Lassalle, the third to the progress of socialism to the passing of the Exceptional Law of 1878. One could have asked for a chapter on Rodbertus, but the author satisfactorily explains this omission by the decline of the influence of Rodbertus on the modern social-democratic movement. The discussion of the exceptional law in the fourth chapter leads to the causes of opposition to social democracy, of which there are four chief reasons.

1. *Atheism.*—"Just as much as early Christianity, social democracy is logically forced to break with all existing faiths, and if it did otherwise it would lose much of that imposing emotional effect which it derives from its systematic completeness. At the same time, for the purposes of immediate practical politics, this opposition to Christianity must be regarded as a tactical mistake" (p. 93).

2. *Views on marriage and the family.*—The social democrats, by their teachings on these subjects, have come into disfavor largely on account of being misunderstood. "They wish, by securing the economic independence of women, as of laborers, to change marriage from a money purchase of legal property into a free choice on both sides, dictated not by economic motives, but by feeling" (p. 96). Mrs. Russell, in the appendix, has given an admirable

criticism of Bebel's book, *Die Frau*, and has shown many of the points both of strength and weakness in the present state of the "woman question" in Germany. She calls attention to the unfortunate influence of the social-democratic idea of *Klassenkampf*, which prevents middle-class and working women from uniting for their mutual benefit. This she illustrates by their failure to combine in a protest against the treatment of women's rights in the new civil code. This code has been adopted since this book appeared, and furnishes one of the best evidences of the impotence of social democracy so long as it views life from the purely economic standpoint. The recent Women's Congress in Berlin would have furnished further illustrations had the book appeared a little later.

3. *Internationalism;* and, 4. *Advocacy of revolution*, are shown to prejudice conservative Germans against social democracy.

Lectures V and VI, on Organization and Tactics, are full of fresh material derived from Mrs. Russell's personal observation of party methods. The great tactical failure has been in attempting to apply their inflexible philosophy to agriculture. The struggle of Vollmar, latterly aided in some measure by Liebknecht and Bebel, to secure a modification of their attitude toward the rural communities, despite its inconsistency with Marxian doctrines, and the opposition of the rank and file to any such heterodoxy, is fully and carefully treated.

A very useful bit of work in the concluding chapter is the account of the existing political parties and their relation to social democracy. It is a pity that the recent advent of the national socialists, pastors Naumann and Göhre, with their followers from the ranks of the Christian socialists, could not have been included. This party, insignificant in itself, gives promise of a certain amount of disintegrating influence among the older parties which may help to weaken socialist orthodoxy, which Mrs. Russell has shown to be such an incubus on the social-democratic party. The conclusion of the book is: "There are, in my opinion, only two items which the party could not abandon without political suicide, namely, *political democracy* and *economic collectivism*, the latter to be brought about by the natural growth of firms, until monopoly becomes the cheapest, and state monopoly the socially most beneficial form of every business" (p. 165). This book is at the same time the fairest and most judicially critical treatment of German social democracy which has appeared.

CHARLES ZUEBLIN.

Essais sur la conception matérialiste de l'histoire. By ANTONIO LABRIOLA. With a preface by G. SOREL. Paris: V. Giard & E. Brière, 1897. 12mo, pp. 348.

OF these two essays the first (*En memoire du Manifeste du parti communiste*) recalls the attention to what was the meaning, in its author's mind, of the phrase which affords the title of this book. This central Marxian position says that the exigencies of the industrial process determine the features of the society's life process in all its other aspects — social, political, and intellectual. The rest of what the famous *Manifesto* has to say is to be read in the light of this principle which gives the socialist point of view. All the rest, even the doctrine of the class struggle and the Marxian theory of surplus-value, is by comparison provisional and tentative, although in point of fact, it is held, the whole of this further development of the theory is substantially correct. The office of this "materialistic conception" is that of a guiding principle (*Leitfaden*) in the study of social life and of social structure. These economic exigencies afford the definitive test of fitness in the adaptation of all human institutions by a process of selective elimination of the economically unfit. They also, through the industrial process through which they work their effect, determine the development of thought and science; the materialistic conception is itself, at the second remove, a product of the industrial process.

The second essay (*Le materialisme historique*) expands and expounds this position further; and it reiterates, with an insistence that sometimes grows tedious, that, "given the conditions of the development of industry and its appliances, the economic structure of society will determine . . . . primarily and directly all the rest of the practical activity of the members, as well as the variations of this activity, which are met within the process that we call history — that is to say, the formation, dissensions, conflicts, and erosion of classes. . . . . And it determines, secondarily, also the tendency, and in an indirect way, in great part, the objects which shall occupy thought and fancy, in art, religion, and science" (p. 239).

The book is notable not as a unique presentation of its thesis nor as a new departure in economic speculation, but as being, on the contrary, a typical example of the theoretical position at present occupied by socialist writers. For the theoretical writers among the socialists, and for the popular discussion in a less pronounced degree, socialist economics no longer revolves about the labor-value dogma that did

such ubiquitous service for the propaganda in its day. Nor is the class-struggle dogma any longer so unfaltering a recourse as it once was, even among the Marxists of the stricter observance. These doctrines and their various ramifications are to an extent giving way before an interpretation of the materialistic conception which does not, in its fundamental position, go much beyond a conception of the evolution of social structure according to which the economic activities, and the habits bred by them, determine the activities and the habitual view of things in other directions than the economic one. And in this development the socialists are drawing close to the position of a large and increasing class of economists who are accepting the materialistic conception, or so much of it as is conveniently to be affiliated with Darwinism, whether they accept it under the style and title approved by their socialist mentors or under designations chosen by themselves. These economists of the new evolutionist or socialist departure are nowhere more numerous or more favorably received than among Professor Labriola's countrymen. THORSTEIN B. VEBLEN.

Sozialismus und soziale Bewegung im 19. Jahrhundert. By WERNER SOMBART. With a chronological table of the social movement from 1750 to 1896. Jena: Gustav Fischer, 1896. 8vo, pp. 143.

IN the course of eight lectures Professor Sombart gives a survey and characterization of the socialist movement and the theories of the socialists from the point of view of an economist who stands outside the movement and still is not out of sympathy with it. The motive force of the movement is found (pp. 7–12) to be the sense of injury and of the precariousness of existence which pervades the proletariat of today, pushed to active measures by a propensity for revolutionary disturbance. This revolutionary propensity is of the nature of a nervous affection and comes of the excessive rush and strain of modern life. That this restless impulse to agitation and revolution has definitively taken the specific direction of the Marxian social democracy is due to the temperament of the German population and the work of Karl Marx (p. 62). There is a large personal element of leadership in socialism. The work of Marx which has so profoundly affected the character of the latter-day social movement consists substantially in an unfaltering realism applied to social and economic speculation. This

realism, the so-called materialistic conception, is a characteristically modern fact, and its acceptance by the modern socialists distinguishes them from all communistic or other radical diversions in the past. The attitude which this point of view should give is that of a passionless, un-eager, unwavering furtherance of the industrial development; for according to this materialistic conception the democratic collectivism is to come in as the due culmination and consequence of industrial evolution. Such, says Professor Sombart, is the attitude of Marx at his best, and such he finds also to be the attitude of the Marxian socialists in a greater degree and more consistently as time goes on. All this disillusionment and work-day apprehension of social development as an inevitable process does not hinder the socialists from holding to their ideal with fervor, nor does it hinder them from doing their best to hasten and aggravate the class-struggle through the means of which the industrial development at its culmination is to pass into the democratic collectivism. The logical and the only promising line of action for the socialists, according to Professor Sombart (pp. 110–118), is to strengthen and accelerate the growth and spread of the modern culture, and carry it to the highest pitch attainable. Oddly enough—though perhaps it seems less odd to an affectionate latter-day citizen of the militant Fatherland—this ideal cultural growth to which socialism should look, it is explicitly held, comprises a large unfolding of warlike activity. Socialism is, on this and related grounds, not apprehended to be, in strict consistency, an international (*à fortiori* not an anti-national) movement. It is a further curious feature of Professor Sombart's exposition of socialism that he finds no logical ground for an atheistic or undevout attitude in the accepted realism of Marx and his followers. This is perhaps as characteristically new-German a misapprehension of Marxism as the contrary misapprehension which makes Marxism "materialistic" in the metaphysical sense is characteristic of the traditional view among English-speaking critics.

V.

Enquête sur la Question Sociale en Europe. By JULES HURET. Paris: Perrin et Cie., 1897. 12mo, pp. xxiv+372.

THE interview is usually regarded, I believe, as an American product, and the boldness and success of the American interviewer is proverbial. We should have difficulty, however, in finding among us

a better example of the art than is presented by M. Huret in this volume. He has exploited and presented in a very readable form the opinions of many of the leading men of Europe on the interesting social questions of the day, especially on socialism. He has presented the ideas of laborers—peasants, sailors, factory hands, etc.—in regard to the present order and the future of society. We thus have in his book a series of social "views" sketched from almost every angle, and with the skill and feeling of a genuine artist. Among those who have contributed to the exhibit in this social picture gallery are the following: Baron Alphonse de Rothschild, Paul Leroy-Beaulieu, M. Cousté, president of the Paris Chamber of Commerce; in England, John Burns and General Booth; in Germany, Herr Bebel, Pastor Stoecker, M. de Hauseman, president of the Berlin Bank of Discounts, and Professor Adolph Wagner; in Austria, Prince Aloïs de Liechstenstein, leader of the Christian socialists, and Schaeffle, the renowned sociologist; in Russia, the leader of the socialists, Pierre Lavroff, and Soloviev, a professor in the University of Moscow; in Italy, the anarchist Malatesta, and in the United States, Archbishop Ireland. Interviews with these and many others, a few descriptions of typical industries, like the great foundry at Creuzot, and of social experiments, like the familistere at Guise, and the discussion of a few incidental subjects make up the body of the work. Prefatory letters from MM. Jean Jaurès and Paul Deschanel, the former an advocate of socialism and the latter opposed to it, praise the author in extravagant terms. Appended communications from two or three persons who are dissatisfied with the representation of their opinions qualify this praise to a considerable degree.

It is obvious that M. Huret's book, as I have described it, is for the general rather than the technical student. Those who have given social questions considerable attention are already familiar with the views of most of those who have been interviewed. In books and speeches they have given to the world their ideas on the topics discussed. These, of course, and not reports of an hour's conversation with them, more or less, however skillfully and correctly presented, are the sources preferred by those engaged in special study, and to whom they are accessible. And yet the book is not without value even to this class of students, for M. Huret, a special student himself, has conducted his inquiries so as to bring out into clearer light opinions which the authors questioned have only vaguely shadowed in their

published works. Moreover the book is well worth reading by the special student in this country, merely for the closer view it affords of the personality of men with whose names he has long been familiar.

While the value of the book to the specialist in social science is considerable, it will be more warmly welcomed by the much larger class of readers who wish just the brief sketches which it contains. Such readers will find in them a great number of facts and ideas in regard to social structure and the future of civilization. They may gain a clear idea of the criticisms and demands of modern European socialism, as well as the objections that are urged against it. They may learn, too, from the existing anarchy of opinion the hopelessness of an early consensus in regard to social reform. Each man interviewed, as M. Deschanel remarks (p. xiv–xv), with rare exceptions, confounds his own function with the interests of society, and sees the social problem only as it regards himself; each one seems shut up in his own compartment—his field, his shop, his bank, his store, his party, his sect, etc.—in complete intellectual isolation. One glorifies socialism, another individualism, while another establishes himself in an intermediary region. One defends the classic political economy, another opposes it, etc. Perhaps the readers of this JOURNAL may be interested in a few of the opinions expressed. I turn first to the interview with Dr. Schaeffle.

Dr. Schaeffle is described as a man of about sixty years, tall, strong, and full of nervous energy. Approached on the subject of socialism he expresses himself emphatically. "I am not a socialist," he says, "not at all! I wrote, indeed, the *Quintessence of Socialism*, which is an exposé of the Marxian doctrines, but an exposé only. My personal opinion was not involved, and I do not understand why theories are attributed to me which are not mine. On the contrary, I published, some time ago, a book on the *Impossibilities of Social Democracy*. Why is it that the socialists who pretend that I am with them are silent about this book? It is because I have refuted in it, one by one, the principles of collectivism" (p. 229).

"You believe, then," asks M. Huret, "that collectivism is without a future?"

"Absolutely without a future," he replies. "I believe it unrealizable, not only in the present, but in the most distant future. Another question entirely different is whether certain things now under private management may not pass over to public control" (p. 229). Such a

change, says Dr. Schaeffle, may take place, but only gradually and without the abolition of private capital. Another quotation revealing his conception of the implications of socialism will throw light on his attitude towards it. "Collectivism contemplates not only a radical change in the economic order, but also a new conception of all phases of human life. It wishes atheism in place of religion, republicanism in the state, integral collectivism in production, unbridled optimism in ethics, materialism in philosophy, the destruction of the family, intervention of the state in education, instruction for everybody; in a word, absolute liberty and equality! What a chimera!" (p. 230.) This may not be the true conception of socialism but it is Dr. Schaeffle's.

How different the whole matter appears from the socialistic points of view may be indicated by a few selections from the interview with Herr Bebel. "Personally," he says, in speaking of the social transformation he desires, "I believe that before the end of the century it will be an accomplished fact" (p. 281). There is optimism for you! And yet he declares "there is no contradiction between the theory of evolution and our hope of an immediate revolution. On the contrary, we are all evolutionists. But we think that social evolution advances at such a pace that the day is not distant when society can no longer exist as it is now. The social order will be transformed from top to bottom and collectivism will appear as a necessary result of a gradual evolution; it will be one of the stages of this evolution, just as the French Revolution was another stage" (p. 278).

Those who are not already familiar with Herr Bebel's views on the family will be interested in the following: "I have shown in a book," he says, referring to his *Die Frau und der Socialismus*, "that there is no family sentiment which is the basis of the institution of marriage, but that marriage is solely the product of economic relations. When inheritance is suppressed, when private property is abolished, when the education of children is public, what is left of the family? The affection of man for woman? Well, we shall prevent nobody from living in the family. You may be together as much as you please. But the family as we know it today will dissolve of itself. Today a young woman looks upon marriage only as a means of living or of increasing her income. Ninety out of every one hundred marriages are economic unions. When women are assured a comfortable living why will they wish to bind themselves for life? And besides, as a matter of fact, what is the family to the workingman? He spends twelve

hours a day in the factory. On his return often the wife goes, in order to help make the living. The children themselves are there too. Yes, I say, what is the family to the workingman?" (p. 279.)

Far different is the opinion of Professor Adolph Wagner. He, like Dr. Schaeffle, is a strong partisan of the family. "Suppress the family," he says, "put all children in charge of the state and would you not increase population in enormous proportions? Will production follow the same progression? If not, what will become of your society of starvelings?" (p. 286.) Professor Wagner, by the way, is a partisan on several other matters, religion, militarism, taxation of bequests, progressive-income tax, and state intervention. As to the latter he says: "In my opinion it is the only solution to hope for. I am an extremist in this matter. I am in favor of the monopoly by the state of railways, canals, mines, and, in general, of all great public organizations" (p. 286). He justifies this position on the ground of the possible diminution of taxes. Speaking of militarism he says: "If I had my way there would be more soldiers than there are. The army is the best possible school for our agricultural population, who are instructed and disciplined in it. Consequently war has been for us a good. It has served to unite us. Even from a moral point of view its influence has been salutary. France and Germany could not be friends prior to 1870, because to be friends they had to respect one another, and France had too much contempt for Germany. But we do not wish war with France. We love the French more even than we do the English, although the latter are our cousins" (p. 291). But Professor Wagner has not the same sentiment for the Russians. "My greatest happiness," he declares, "would be war with Russia! I hate Russia! I hate her for her absolutism, for her intolerance, for her language, for her religion, for the corruption of her officials. I hate her because she threatens German civilization. I hate her, in a word, for the profound antagonism which exists between the Slavs and the German race" (p. 291). Pretty strong language, one feels, for a partisan of religion.

It would be interesting to quote from others; from the interview with M. Paul Leroy-Beaulieu, for instance, who declares that with the exception of Fourier, perhaps, there has not been a single serious socialist, and that Karl Marx and Ferdinand Lassalle are not worth consideration (p. 341), but space will not permit. Every reader must admire the skill with which M. Huret has drawn out the opinions of

those whom he has interviewed, and his success in keeping in the background whatever views he himself may hold. At the same time he will feel a growing discouragement in regard to the possibility of reaching something like a consensus of opinion on *la question sociale.*

I. W. HOWERTH.

Domestic Service. By LUCY MAYNARD SALMON. New York: The Macmillan Company, 1897. 8vo, pp. 307.

THERE are few phases of the labor problem about which people profess to know so much and in reality know so little as about domestic service. In every community there are many good people who seem to think that years of personal experience, no matter how restricted in character, give them the right to have very fixed views as to possible methods of improving household labor in general. A company of women seldom assembles without attempting an argument in behalf of one or more so-called solutions of the problem. It is true, indeed, that no unusual experience is required to show that the problem is a real one which faces every householder in a most practical way. The urgent need which exists makes the fact the more strange that Miss Salmon's work is the first serious attempt to deal with the subject in a truly scientific spirit.

That she is a pioneer in this field is evident from the author's own prefatory words, in which she sets forth the purpose of the book. With the end in view of tabulating and presenting "facts which may afford a broader basis for general discussion than has been possible without them," and with the hope that writers on economic theory and economic conditions will include domestic service in their scientific investigations of various industries, Miss Salmon has drawn from many sources a large amount of historical and economic material which she has put together in most readable form. In addition to this she has introduced what she chooses to term a "theoretical" discussion of doubtful and of possible remedies. The reader who expects to find the theoretical views of a closet investigator will be impressed with the large practical knowledge and shrewd common sense which the author shows.

The introductory chapters deal with the historical aspect of the subject. The changes in the amount and character of household labor which have come about through the substitution of the factory

system are clearly set forth, and it is shown that it is no more possible to revert to the old condition of domestic employment than to the ancient industrial system as a whole.

The economic study of the problem suggests to the author the following conclusions: the conformity of wages in domestic service to certain general economic laws; the fact that the wage factor alone does not determine the number of persons in the occupation; and the existence of a few conditions which affect, perhaps unconsciously, the willingness of women to engage in this work. The logical result of such a study is repeatedly indicated by the author, who maintains that it is absolutely impossible for the individual employer to settle from an exclusively personal point of view the many questions which arise. It is pointed out that the difficulties in the path of both employer and employee will not only never be removed, but will increase until the subject of domestic service is regarded as a part of the great labor question of the day and given the serious consideration it deserves.

A short chapter on "Advantages in Domestic Service" is followed by two long ones on "Industrial Disadvantages of Domestic Service" and "Social Disadvantages." The following are given as the chief industrial disadvantages: the lack of all opportunity for promotion, the great amount of mere mechanical repetition involved, the lack of organization in the service, irregularity in working hours, the limitation of free time evenings and Sundays, competition with the foreign-born and the negro element that seems objectionable to the American born, and the interference with work often by those less skilled than the workers themselves. The social disadvantages, as enumerated by Miss Salmon, seem in many cases so unnecessary that many a conscientious housewife, as she reads them over, will seriously rebuke herself for her thoughtless disregard of the real rights of those in her employ.

The remedies popularly proposed as means of meeting existing difficulties are discussed in the light of general principles — political, economic, industrial, social, and educational — and are shown to be ineffective in so far as they are at variance with these principles. Emphasis is indeed placed by the author on the ethical side of the subject; but the claim is made that this is not sufficient, since the relation between employer and employee can no longer be considered a purely personal one. The utter absurdity of attempting to solve an economic or industrial problem by kindness alone seems fully appar-

ent, and yet a critic of this book has recently stated that "the problem may be left to work itself out under the influence of mutual forbearance and good-will"!

The author, recognizing the existing clamor for a "remedy," tentatively draws the following suggestions from her investigation: that the historical study of the subject points to relief through the removal of the social stigma; that the specialization of household employments, in consequence of the removal of as much work as possible and the removal of the domestic employee as well from the home of the employer, leads to a simpler and better manner of life for both employer and employee; that the introduction of profit sharing is one means of placing household employments on a business basis; that the establishment in connection with one of our great universities of a school of investigation, open only to graduates of the leading reputable colleges, is the only opportunity for the scientific advancement of the household and all questions connected with it; and that, together with the last, a recognition of the necessity for the readjustment of the work of both men and women must result in making any form of housework for remuneration honorable for any person — man or woman.

Domestic service is everywhere made a topic for conversation or gossip. The value of Miss Salmon's work lies largely in showing that it should rather be a subject for scientific investigation and study. It will, however, be many a long year before a book on the subject appears which will be so suggestive in practice and so interesting in theory as is this of Miss Salmon's. MARION TALBOT.

Industries and Wealth of Nations. By MICHAEL G. MULHALL. London: Longmans, Green & Co., 1896. 8vo, pp. xii+451.

"THE principal value of statistics is for purposes of comparison, and they must often cover the debatable ground betweeen ascertained facts and reasonable conjecture." This quotation from Jevons, and one from M. Leroy-Beaulieu to the effect that "we must avoid the absurdity of limiting statistics to ascertained facts, for in many cases this branch of science can reach only approximate results," stand at the beginning of Mr. Mulhall's book, and indicate his conception of the nature of his work. He has endeavored to bring together the

results of a great number of official and private statistical studies, published in many different languages, so as to present the leading industries and the earnings and wealth of the countries of Christendom in such a way that the resources and achievements of the several nations may be readily compared, and the progress of each and all of them during the last sixty years may be shown with some degree of adequacy.

The book contains an initial index to the chapters and to the diagrams, and at the end of the volume a topical index of seventeen pages. The introduction, describing the plan of the work, is followed by a chapter of some forty pages giving a conspectus of the industrial condition of the civilized world, and this by chapters on the several countries; after which come seventeen pages of "comparative tables" (thirty-seven in number) and an appendix of about forty pages, with divisions corresponding to those of the body of the work.

A work of this kind, from a statistician of Mr. Mulhall's experience, is something to be grateful for, notwithstanding the fact that such an undertaking must inevitably leave much to be desired. Mr. Mulhall has produced a compendium which has the merit of containing a great quantity of useful material and also of being brief and orderly and having the clearness which comes from brevity and order. Notwithstanding the proverbial dryness of statistics, the book is eminently readable, and the diagrams, as a result of their simplicity, are particularly successful. In one matter of detail alone I venture to criticise the diagrams: I believe that the arrangement of bars indicating relative magnitude in a pyramid, or *double* flight of steps, takes longer to grasp than the arrangement of them in a *single* flight of steps; that is, I think that the longest bar should be at one end instead of being in the middle.

In order to make his data comparable Mr. Mulhall has been obliged to modify and rearrange his material; and this he has done in a way — more or less arbitrary — which is briefly described in his introduction. We recognize that an extended discussion of the reasons which have led him to follow one of several debatable courses would be inconsistent with the limits of such a handbook as this; and that such a discussion should no more be looked for in the present volume than exact and specific references to the sources for his material. Nevertheless we feel that a somewhat fuller treatment of these matters is desirable. On page 12, in the case of such an important matter as

the estimate of the merchandise item in his table of national wealth, he tells us shortly, without a word as to the ground of his decision, that he takes 50 per cent. of the annual amount, at the same time reminding us that such a respectable statistical commission as that of the United States census takes 75 per cent. as the proper estimate. Whether or not any fuller explanation of our author's basis of procedure should be given in such a case as that just mentioned, there can be no question that we should know what he has actually done in any given instance, and we should not be left with such an ambiguous statement as that on page 4, where he tells us that, where returns do not exist, "we may go on the hypothesis that the increase of fixed engines since 1878 has been in the same ratio as that of the consumption of raw material, OR *that of the number of factory operatives.*" [Italics mine.]

As the main purpose of his tables is the facilitation of comparisons, and as Mr. Mulhall himself emphasizes the importance of the time element in all comparisons, we feel that he should be more careful in the collation of statistics than he has been in his "comparative tables." In Table I, on page 377, the population of the United States appears as 70.7 millions, while in Table II it is put at 62.6 millions. The former number seems to be based upon an estimate for 1896, the latter upon the census of 1890; and yet as a part of Table II (in which the earlier estimate appears) we have a comparison between the inhabitants per square mile in 1821 and in *1896*. A further comparison of Tables I and II shows us that the discrepancy is not confined to the statistics for the United States. About half of the figures in Table II (including those for such important states as France and Germany) are the same as those in Table I, while the other half are different. The difference between 1890 and 1896 (a difference of nearly 13 per cent. in population, according to Mr. Mulhall's own figures) is too great to be ignored in this way. That the convenience of comparing directly the data gathered by the principal censuses taken in the leading European states and in America may excuse the inaccuracy of comparing the returns of 1890 for one country, for instance, with those of 1891 for another country, does not seem to the writer to justify a statistician in ignoring a difference of five or six years in presenting the comparative conditions of rapidly growing nations.

Objection will probably be made by different statisticians to a number of Mr. Mulhall's methods of calculation; and although it may be

answered that when he has told us what his method of procedure is, and has consistently adhered to it, he has done all that we may reasonably demand, we nevertheless reserve the right to take exception to some of the calculations thus made. For instance, the writer is inclined to believe that the omission (see page 3) of all account of water power and electricity from the working power of nations (to say nothing of the omission of windmills and of asses and oxen) is a more serious omission than Mr. Mulhall deems it; and, further, although it may be said that hand power is coming to be of so little importance in a general estimate of available energy that minute calculations in regard to it are useless, the writer must protest against Mr. Mulhall's assumption that "for all practical purposes we may omit women and children."

Aside from debatable questions, there seem to be some indubitable errors in method, as where, on page 54, in a comparison between wealth and debt, Mr. Mulhall deducts the cost of income-yielding, state-owned railways from the national debt, without any corresponding deduction from the total national wealth, in the computation of which these railways were considered. Elsewhere, in a similar case, he more properly makes a deduction from both of the sums to be compared.

Imperfections of the kind we have been considering are doubtless to be expected in a work of such vast scope as the one before us, but their discovery may serve to remind us how cautious one should be, not only in adopting the author's conclusions, but even in using his figures. *Apropos* of the author's conclusions, the reader of Mr. Mulhall's book can hardly fail to notice that he has strong convictions on a number of questions, such as free trade, honest money, state ownership of railways, and the Irish question in imperial politics, and that, although he does not take advantage of his author's position to argue these questions (except in so far as the presentation of pertinent statistics is argument), he does not hesitate to express his conclusion on these matters every now and then, briefly, indeed, but very positively. Although he "lays down the law" in a right royal manner, however, it may be said that as a rule he presents a good statistical basis for his judgments.

In conclusion it is to be observed that the result of our author's studies is a very pleasing picture of the world's present condition and future prospects. This roseate view of life, however, would doubtless be greatly modified if in his work Mr. Mulhall had taken the question

of distribution seriously into account. For most countries he has given us no statistics as to the distribution of the nation's wealth or the nation's earnings among the different classes and grades of workers, and such statistics of distribution as he has offered are quite inadequate. Perhaps it is to be regarded as fortunate, from the standpoint of the student of social welfare, that the scope of Mr. Mulhall's work did not embrace statistics of distribution, since there is doubtless an advantage in having the sufficiency of production firmly established before the question of distribution is taken up for consideration.

FREDERIC W. SANDERS.

Street Railway Franchises. By LEE MERIWETHER, Commissioner of the Bureau of Labor Statistics. Jefferson City, Missouri: State Printers, 1897. 8vo.

Street Railways of Chicago and Other Cities. By GEORGE A. SCHILLING, Secretary Illinois Bureau of Labor Statistics. Chicago: Committee of One Hundred against the Humphrey Bills, George P. Englehard, Chairman, 1897. 8vo, pp. 73.

The Street Railway Problem in Cleveland. By WILLIAM ROWLAND HOPKINS. New York: The Macmillan Company (for the American Economic Association), 1896. 8vo, pp. 86.

The Street Railway System of Philadelphia. Its History and Present Condition. By FREDERICK W. SPEIRS. Baltimore: The Johns Hopkins Press, 1897. 8vo, pp. 123.

THE growing importance of the street-railway property in America is beginning to be recognized by economic students, and they are trying to trace the steps by which shrewd promoters and financiers have been securing millions during the past decade. In every instance the problem of transportation in the great cities is found to be a social and political problem as well as an economic one. Indeed, the economic side of the question is the simplest and least interesting. No investments today are more surely profitable or easily managed than the investments in street railways—if the political complications can be removed. The past decade has been one of rapid change and development, so that the political side has been constantly before the public

by reason of the new privileges which were being sought. Now that the building and change of power in our leading cities is largely accomplished, the consolidation requires attention.

At the outset a lamentable dearth of available information confronts the student. In Massachusetts the Railroad Commission exercises the same control over street railways as over steam roads, and has collected the facts for Massachusetts cities. In a few other states some control is exercised and official reports required. In most instances, however, the street-railway managers have been allowed to give out only the information which they wished the public to have. Their business has been treated not as a public but as a private business, the details of which the public had no right to know. Now that the relations between the street-railway companies and the municipalities are being more carefully studied, and the cities are trying to secure a part of the revenue which hitherto has accrued almost entirely to the corporations, the need of definite information is more clearly felt. In the near future it is to be hoped that some such publicity will be required of the street railways as is now obtained from the steam railways. In the meantime we are glad to have such light upon the subject as is furnished by occasional investigations by labor bureaus and students. Fortunately from these sources good material is being supplied. The refusal of railway officials to give in detail the cost of construction and operation necessarily hampers the investigation, but taking such facts as the roads themselves publish the showing is very favorable to the holder of street-railway stocks, and the amount which they can afford to give the public, either by lowering fares or paying for franchises, appears large.

Mr. Lee Meriwether, in the *Eighteenth Report of the Missouri Bureau of Labor Statistics*, maintains that the St. Louis street railway could afford to pay $1,478,582 per annum, thirty times the $47,500 which they actually pay; that Kansas City should receive from street railways $300,000 per year, but that the council has not exacted a cent; that the failure to secure compensation enables the companies to capitalize their property at more than four times its cost, and pay dividends upon this inflated capital; that a three-cent fare would allow good dividends on capital actually invested; that taxation of street-railway property is grossly inadequate, being only one-fifth of the rate on private property; that these special privileges are given the street-railway companies because of their political power.

All these claims are very forcibly urged and clearly illustrated by diagrams and by comparison with other cities.

IN the *Ninth Biennial Report of the Illinois Labor Bureau*, Secretary George A. Schilling and Professor E. W. Bemis have given the best treatment yet made of the street railways of Chicago. They go into the history of the original franchises and their extensions, the building of the roads, the cost of the lines compared with their capitalization and the market value of the securities.

Comparisons are made with street railways in other cities to show the amount of compensation which could be paid here. The legal aspect of the subject is also touched upon. The peculiar method by which Mr. Yerkes has financed the new lines in the north and west parts of the city, keeping the lines separate from the old system in order to secure two fares, building them entirely from the proceeds of bonds made good by the guarantee of the old companies and keeping all the eleven or twelve millions of stock for his profits while he has shifted the risks to the stockholders in the old roads — all this is clearly shown by extracts from a paper prepared by Mr. F. A. Vandelip, now assistant secretary of the U. S. treasury. [This paper was first read before the Political Economy Club of The University of Chicago, and then printed in Rand-McNally's *Bankers' Monthly*. It is a brilliant and accurate account of stock watering in Chicago.]

The report shows that the three main systems in Chicago could be duplicated for 30 million dollars, but are capitalized at 60 million dollars, and their securities have a market value of 90 million dollars. The capitalization per mile in the three systems has increased from $66,838 in 1886 to $126,255 in 1896. Little or nothing is ever written off for depreciation. The Chicago City Railway has not been as brilliantly financed as the North and West Side systems, so its capital is only $90,000 per mile to $145,000 for the Yerkes lines, although the South Side system is as well or better built and equipped. The assessment of the property of the street-railway companies is also less than half that of property in the heart of Chicago, being 4.7 per cent. of the par value, or 3.23 per cent. of the market value of their outstanding obligations, while down-town property is assessed at 9.25 per cent., and outlying property sometimes as high as 25 or 30 per cent. of its market value. The $50 license fee on each car is also evaded so that the city receives only $58,828 instead of the $320,000 which the law requires. If taxes, license fees, and special payments be added together, the total sum paid the city in 1896 is found to be $527,456, while if the street railways had paid on their property the same rate of taxes as is paid by

other Chicago property, their taxes alone would have been $877,148. Thus all the payments to the city are $350,000 short of what the taxes alone should be.

Special value attaches to the report just at this time because of the attempt which the street-railway owners are making to get their enormously valuable privileges extended by the legislature for a period of fifty years. So important did the committee which is leading the fight against the extension deem this report that they had it reprinted for general distribution.

In another form the history of the street-railway experience of Cleveland and Philadelphia has been presented. Curiously enough both of these cities have been through the same kind of a fight that Chicago had to face this year, and in both instances the street-railway companies won. It was the struggle in the Ohio legislature which led to a gathering of the facts presented by Mr. Hopkins in his monograph. He mentions the common tendency to control legislation by corrupt methods, shows that the street-railway interests dominate both political machines and have among their lobbyists United States senators. The consolidation of lines, the large profits, the watered stock are found in Cleveland as in other cities. The over-capitalization seems to have gone even farther in Cleveland than in Chicago. The outstanding securities are four times the cost of duplicating the property on which they were based. Mr. Hopkins does not confine himself so closely to a presentation of facts as did the labor bureau, but considers the various methods of ownership and control. He pronounces against government ownership because the present cost of purchase would be too great. City operation is thought to be impracticable because of the high price paid by the public for labor, and because of the corruption which permeates all political life. The study made by Miss Stewart of the cost of labor under public and private employment in Baltimore, Philadelphia, New York, and Boston (published in the *Bulletin of the U. S. Labor Bureau* for November 1896) throws doubt on this first objection to city operation, and the corruption which all of these and other studies have shown to exist under the present system leaves a doubt as to the possibility of more political evils existing under direct operation than are caused by the franchise-seeking under the present system. Mr. Hopkins, however, favors a system of private ownership and operation, with strict public control, and the exaction of compensation equal to the value of the privileges granted.

The study of the Philadelphia system is rather more extended than that of Cleveland, and as the city is larger the experience is even more valuable and perhaps merits a fuller summary.

FROM the time the first lines were planned in 1857, Philadelphia citizens have had to contend with the peculiar influence which in the hands of franchise seekers has proved so potent in all American cities. The arguments used by citizens of Philadelphia in 1858 against the granting of a charter to authorize cars on Chestnut and Walnut streets are quite similar to those heard today. They were that the company was given large and indefinite powers and that the city got no adequate returns for the privileges granted. But both legislature and council seemed to attach more weight to the arguments of the companies than to the protests of the citizens. For in the two years, 1857 and 1858, eighteen charters were granted. The roads were rapidly built and proved profitable from the first. Within six years the companies were paying from 10 to 45 per cent. on the capital invested, and with the increase of population the returns rapidly increased.

Thirty-nine companies had been granted franchises on the theory that they would compete with each other and thus insure good service at low rates. But the companies had no sooner been formed than an alliance was made, known as the Board of Presidents of City Passenger Railway Companies. From 1859 this combination controlled the policy of all the street railways until 1895 when the separate lines were merged into one gigantic monopoly. The consolidation began in 1864 and within a dozen years half of the companies had been absorbed or had united with their so-called competitors. Further consolidations were made between 1876 and 1883. In the latter year the Philadelphia Traction Co. was incorporated, not for the purpose of building new lines, but to acquire control of lines already in operation. The chief promoters were Messrs. Widener and Elkins, well known as street-railway organizers in Chicago, New York, Pittsburg, and other cities. These gentlemen appreciated the enormous profit that street railways could be made to yield and proceeded to lease and consolidate the original lines. Within two years their traction company controlled 36 per cent. of the city railways. But the Philadelphia Traction Co. was not satisfied with the powers given it by ordinary corporation laws, and so, using its potent political influence, it forced in 1887 the pass-

age of an act providing for the special incorporation of motor companies with large powers. The passage by the general assembly of this act incorporating motor companies aroused intense popular opposition and a great mass meeting was held on March 1, 1887, to protest against its signature by the governor and incidentally to demand the reduction of tariff from six cents to five cents. At that meeting Mr. Wayne MacVeagh made an interesting prophecy, which was fulfilled eight years later: "You may rest assured your street-railway system is destined very soon to be an absolute monopoly; you cannot stop it; legislators cannot stop it. The only question remaining is whether the monopoly shall be owned by the Traction Co. or the whole body of the good people of Philadelphia." Under this act the Electric Traction and the People's Traction companies were formed, and in 1895 the three were leased to the Union Traction Co., thus consolidating all the street railways of Philadelphia.

What the city might have realized if its agents had been wise or honest enough not to grant perpetual franchises is shown by the terms on which the original lines owning the franchises have been leased to the traction companies. For the right to operate these lines the Union Traction Company is paying $3,755,000 annually in addition to payments of interest on all the capital required to build the roads.

For the stock of these lines, which the companies claim cost 36 million dollars to construct, 50 million dollars cash was secured, and the present market value of the stocks of these roads is 120 million dollars. Subtracting cost of construction from market value leaves the value of the franchises which have been given away 84 million dollars.

A most significant fact and one hard to explain in view of the enormous value of the Philadelphia franchises and the sums annually paid for them by the traction company which now operates all the lines is that the city has reserved in the charters the right of purchasing the roads at any time by paying the cost of construction. If the city should exercise this right the $3,755,000 which is now paid to the holders of the franchises would be paid into the city treasury. This shows the strength of the inducement which the companies have to keep control of the city council and to interest as many citizens as they can in the securities of the street railways. This has been accomplished by a systematic and successful effort to get stock of the traction company into the hands of small investors in order that their

self-interest might lead them to shield the magnates from the attacks of an indignant public.

In the same way Mr. Yerkes planned to get legislation which would enable him to get the stock of the new lines on the North and West sides of Chicago into the hands of the public. The bonds, which represent all the capital invested in the roads, have already been bought by the people. If the Yerkes franchises are extended for fifty years he will be able to secure as many millions as the dishonest Pennsylvania officials have given to Mr. Yerkes' partners in Philadelphia at the expense of the city.

WILLIAM HILL.

The Manufacture and Properties of Structural Steel. By HARRY HUSE CAMPBELL. New York: The Scientific Publishing Company, 1896. 8vo, pp. xxi+397.

IN this admirable work the author has rendered a service to all those who desire information about the modern processes employed in the manufacture of steel. The prominence which our country has recently assumed as a producer of iron and steel, and the likelihood that our iron masters will soon become aggressive competitors in the world's markets, have recently directed much attention to these great industries, and therefore this volume is very timely. An intelligent view of the international situation is wholly impossible without a knowledge of the leading characteristics of the iron-ore supplies of the leading producing nations and of the respective advantages offered by the several processes of steel manufacture. The latter information, heretofore very difficult to obtain, has been well presented in limited space by Mr. Campbell. Some few years ago one of our leading statisticians, disclaiming all technical knowledge, ventured in a paper of some length a prediction as to the future location of our iron and steel industries. It is perhaps unnecessary to say that his reputation as a scientific observer and writer was not advanced by this paper among those having a practical knowledge of the manufacture of iron and steel. The mere proximity of the raw materials of iron does not in itself assure the location of furnaces at or near the place where the raw materials are found. Because, for instance, the ore may contain impurities which prevent the use of the cheapest methods of manufacture, and the coal may not be a coking coal.

As Mr. Campbell did not set out to give a complete account of the manufacture of steel, starting with the raw materials of pig iron, he has little to say about iron ores. To the student of the iron and steel industries the most valuable portions of this book are the chapters on the several processes of steel manufacture, the chapter devoted to the influence of certain elements on the physical properties of steel, and the chapter on "certain costs of manufacture." These chapters are the backbone of the volume. The discussion of the different methods of making steel and of the various instruments employed, and the examination of the effects of various elements on the physical properties of steel are by far the most satisfactory that I have thus far met with. The treatment is thoroughly up to date, and the reader is not forced to read interminable pages devoted to methods which were either never largely used or that were long since antiquated. The chapter on the cost of production by the several processes and in the different localities leaves something to be desired. There is occasionally indefiniteness where greater exactness seems possible, for Mr. Campbell has a very wide practical knowledge of conditions. Then, too, the difficulties of making steel in the South have been overemphasized. This Mr. Campbell himself now recognizes and has stated as much in a letter which I take the liberty in part to subjoin: "I have come to the conclusion," says he, referring to his book, "that I may have overestimated the difficulty of making good iron in the South. If Alabama can keep its silicon below 1 per cent. or even come near to it, and keep its sulphur below .10 or .12 per cent., there is absolutely no reason why a basic open-hearth [plant] cannot be run commercially and regularly in that state."

In this volume it might fairly have been hoped that we should not again encounter the time-honored argument that we are handicapped in the race with the other great iron-producing nations because of the wide separation of the raw materials used in making iron. It occurs, however. In speaking of the development of the iron industry in this country Mr. Campbell says: "This wonderful progress has not been the unearned harvest of bounteous nature, for it has been accomplished in defiance of mighty obstacles in the enormous distances through which the raw materials must be carried" (p. 1). This statement is very misleading. In some districts coking coal, iron ore, and limestone occur in the closest proximity; such is the case in the Tennessee-Alabama region. But he probably refers to the great distance

which the ores of the Lake Superior region are carried. Truly these ores are carried vast distances, but does not their high character warrant this? Can either England or Germany obtain ores equally rich in metallic iron and free from injurious ingredients any nearer at hand? Again, can the iron masters of Germany or England obtain equally good ores at as low a cost as the iron masters of Ohio and western Pennsylvania secure Lake Superior ores?

GEORGE G. TUNELL.

I Diseredati e i loro Diritti. By PIETRO PELLEGRINI. Borgo a Mozzano. Tipografia Editrice N. Vannini, 1897. 8vo, pp. 205.

THE title of this book, The Disinherited and their Rights, suggests at once the class of literature to which it belongs. The closing decades of the century have been prolific in books dealing with the economic condition of those who have failed to maintain their adjustment in the ever-advancing capitalistic régime. Of these works Italy has produced her share. The younger writers of that country especially are socialistic. The corruptions of the Roman church and its disgraceful struggle to regain temporal power have driven the most intelligent classes into open rebellion against the mysticism of Christianity, and this hostile spirit is manifesting itself in the literary expression of naturalistic and materialistic doctrines. Spencer and Darwin are accepted perhaps for more than they really stand for. Karl Marx finds many devoted adherents. The materialistic conception of history, as set forth by him, is accepted and made the basis of social and economic discussion.

While this is true with perhaps the majority of the younger Italian economic writers, the book before us is written with a sense of that moderation or measure by which the Greek strain in the Italian blood is none too often manifested. The author believes that the material element in social progress has been unduly emphasized. While modestly disclaiming an attempt to make a scientific study, he seeks to show that this element is only one of many diverse and concomitant factors of which the social order is a resultant. This specific task, to those who do not accept the materialistic conception of history, may seem self-imposed. And indeed a part of the book does appear on this side of the water to be a superfluous contribution to economic

discussion. This may be due, however, to our failure to realize the exact condition of economic science in Italy. But the attempt of the author to show that the evolution of capitalism may take a juster form, and that a new juridical and social order based upon the physical order now existing, but quite unlike the actual condition of things, may be evolved, is highly interesting and worthy of the most serious consideration.

Like the scientific socialists in general the writer maintains that socialism is an outgrowth of capitalism. The institution of the wage relation has disorganized the family and destroyed the laborer's interest in production. The land has been capitalized and the peasant proprietor, like the wage-earner, has been cast out of society, and together they become socialists and naturally demand a new order on their own account (p. 6). But their demand is indefinite. The vagueness of the socialistic ideal, and the disinclination of the proletariate to aim at the practical, make their efforts futile. The author would therefore echo the cry of the internationalists, "Proletarians of all lands unite!" They should avail themselves of their civil, technical, economic, and social capacity to enforce their demands (p. 29). The following are among the subjects discussed: "From the Bourgeois to the Proletariate," "The Physical-Industrial Organism," "The Personality of Industrial Organs," "Personal Relations," and "The Real Relations Due to Industrialism." The book concludes with chapters on "Socialism," "The New Era," and "Peace." It is a worthy and welcome attempt to correct the aberrations of both individualism and socialism.

I. W. H.

APPENDIX.

TABLES RELATING TO THE FLOUR AND GRAIN TRAFFIC.

TABLE I.

FREIGHT RATES ON WHEAT (PER BUSHEL) FROM CHICAGO TO NEW YORK BY LAKE AND CANAL, BY LAKE AND RAIL, AND BY ALL RAIL, AND LAKE RATES FROM CHICAGO TO BUFFALO.

Calendar year	Average rates per bushel				Calendar year	Average rates per bushel			
	By lake and canal[1] (cents)	By lake and rail (cents)	By all rail (cents)	By lake to Buffalo (cents)		By lake and canal (cents)	By lake and rail (cents)	By all rail (cents)	By lake to Buffalo (cents)
1857.....	25.29[2]			9.89[4]	1877.....	11.24	15.80	20.50	3.72
1858.....	16.28		38.61[3]	3.76	1878.....	9.15	11.40	17.70	3.07
1859.....	17.59		34.80	5.08	1879.....	11.60	13.30	17.74	4.74
1860.....	24.83		34.80	9.89	1880.....	12.27	15.70	19.80	5.76
1861.....	26.55		41.58	11.53	1881.....	8.19	10.40	14.40	3.44
1862.....	26.33		48.00	10.49	1882.....	7.89	10.90	14.47	2.50
1863.....	22.91		49.20	7.51	1883.....	8.37	11.50	16.20	3.41
1864.....	28.36		60.00	9.58	1884.....	6.31	9.55	13.20	2.18
1865.....	26.62		44.88	9.78	1885.....	5.87	9.02	13.20	2.02
1866.....	29.61		46.20	12.34	1886.....	8.71	12.00	15.00	3.68
1867.....	22.36		44.75	6.67	1887.....	8.51	12.00	15.75	4.13
1868.....	22.79	29.00[3]	37.84	7.14	1888.....	5.93	11.00	14.50	2.56
1869.....	25.12	25.00	35.57	6.81	1889.....	6.89	8.70[5]	15.00	2.51
1870.....	17.11	22.00	30.00	5.88	1890.....	5.85	8.50	14.30	1.96
1871.....	20.24	25.00	31.80	7.62	1891.....	5.96	8.53	15.00	2.38
1872.....	24.47	28.00	34.99	11.46	1892.....	5.61	7.55	13.80	2.19
1873.....	19.19	26.90	31.02	7.62	1893.....	6.33	8.44	14.63	1.66
1874.....	14.10	16.90	26.25	4.03	1894.....	4.44	7.00	13.20	1.27
1875.....	11.43	14.60	24.00	3.42	1895.....	4.11	6.95	11.89	1.97
1876.....	9.58	11.80	16.86	2.90	1896.....				

[1] Including canal tolls until 1882, but not Buffalo transfer-charges.

[2] *Statistical Abstract*, 1896, p. 327.

[3] *Report of the Chicago Board of Trade*, 1895, p. 115.

[4] JOURNAL OF POLITICAL ECONOMY, June 1896, p. 414.

[5] Averages of officially published tariffs.

TABLE II — PART 1.

ELEVATING AND STORAGE RATES AT BUFFALO.

Years	Charge to grain (cents)	Charge to vessels (cents)	No. of days' storage
1855 and 1856[1]	1¾	¼	5
1857 to 1860[1]	¾	¼	5
1861	½	¼	5
1862 to 1864	¾	¼	5
1865 and 1866	1¾	¼	10
1867 and 1868	1¾	¼	20
1869	1¾	¼	10
1870	1	¼	10
1871	1	¼	5
1872 and 1873[2]	1[3]	¼	5
1874	1	¼	10
1875 and 1876[2]	½ to ⅞[3]	⅛	5
1877	⅞	⅛	5
1878[2]	¼ to ⅞	⅛	5
1879[2]	⅝ to ¾	⅛	5
1880[2] and 1881	⅝ to ⅞	⅛	5
1882[2]	½[4]	⅛	5
1883 and 1884	¾	⅛	5

[1] Estimated — Elevators running wild greater part of the year. No records kept; figures obtained from old residents in the grain and vessel interests. [2] Running wild part of the year. [3] About. [4] Average.— *Internal Commerce*, 1885, p. 489.

TABLE II — PART 2.

ELEVATING AND STORAGE RATES AT BUFFALO, 1870–1895.

(Prepared by Mr. William Thurstone, Secretary of Buffalo Merchants' Exchange.)

Year	Elevating and storage [1] (cents)	Year	Elevating and storage [1] (cents)
1870	1.25	1884	.875
1871	1.25	1885	.875
1872	1.25	1886	.875
1873	1.25	1887	.875
1874	1.25	1888	.875
1875	1.	1889	.875
1876	1.	1890	.875
1877	1.	1891	.875
1878	1.	1892	.875
1879	1.	1893	.875
1880	1.	1894	.875
1881	.875	1895	.875
1882	.875	1896	.875
1883	.875		

[1] Storage included; 5 to 10 days the limit.—*Statistical Abstract*, 1896, p. 327.

TABLE III—PART I.

EASTWARD SHIPMENT OF FLOUR AND WHEAT FROM CHICAGO.[1]

(,000 omitted.)

Year	Flour (barrels)			Wheat (bushels)		
	Lake	Rail	Total	Lake	Rail	Total
1860	218	408	626	11,817	477	12,295
1861	542	1,001	1,544	15,005	730	15,736
1862	1,146	672	1,819	13,466	290	13,756
1863	1,206	272	1,478	10,646	49	10,695
1864	1,034	213	1,248	9,983	144	10,128
1865	646	721	1,367	6,502	1,147	7,650
1866	481	1,555	2,037	5,827	3,605	9,433
1867	650	1,187	1,837	8,492	1,072	9,564
1868	774	1,749	2,524	8,896	2,114	11,010
1869	829	1,323	2,152	11,279	1,758	13,037
1870	574	989	1,563	13,429	2,621	16,050
1871	488	694	1,182	12,120	576	12,697
1872	223	1,022	1,246	8,831	2,363	11,195
1873	428	1,773	2,201	15,528	8,149	23,678
1874	555	1,672	2,227	16,974	9,729	26,703
1875	328	1,872	2,201	16,061	5,956	22,017
1876	236	2,309	2,546	7,396	5,378	12,775
1877	148	2,229	2,693	10,345	2,957	13,303
1878	321	2,371	3,005	12,903	10,018	22,922
1879	330	2,675	2,791	17,622	12,282	29,855
1880	527	2,263	4,390	16,685	4,728	21,413
1881	159	4,231	4,390	7,688	7,680	15,368
1882	792	2,871	3,663	14,944	2,389	17,333
1883	801	3,062	3,863	7,067	2,590	9,658
1884	753	3,920	4,674	11,518	6,319	17,838
1885	652	4,425	5,078	5,436	5,422	10,859
1886	1,391	2,189	3,580	10,513	2,396	12,909
1887	1,544	4,456	6,001	17,313	6,542	23,855
1888	1,711	3,451	5,162	5,895	3,632	9,527
1889	1,811	1,769	3,581	10,330	3,841	14,172
1890	1,757	2,091	3,848	6,965	2,908	9,874
1891	1,640	2,244	3,885	31,102	5,470	36,573
1892	2,455	3,123	5,588	33,498	6,812	40,310
1893	1,471	3,964	5,435	19,720	2,618	22,339
1894	1,630	1,926	3,556	15,016	940	15,957
1895	791	1,597	2,389	13,258	5,666	18,925
1896	1,006	1,628	2,635	13,232	9,342	22,575

[1] The statements cover the calendar years, except from 1863 to 1869, when the trade-year of the Chicago Board of Trade ended March 31. The figures for the years from 1863 to 1883 (inclusive) were taken from *Internal Commerce of the United States*, 1882, pp. 59, 60; those for the other years were compiled by me from the *Reports of Chicago Board of Trade*. It is assumed in these tables that all flour and grain forwarded by lake was shipped eastward, and this is approximately correct.

TABLE III—PART 2.

EASTWARD SHIPMENT OF CORN AND OATS FROM CHICAGO.[1]

(,000 omitted.)

Year	Corn (bushels)			Oats (bushels)		
	Lake	Rail	Total	Lake	Rail	Total
1860	13,063	577	13,640	605	242	847
1861	23,987	352	23,987	1,422	69	1,492
1862	30.345	125	30,470	2,470	357	2,828
1863	24,749	130	24,879	5,696	2,761	8,458
1864	11,993	654	12,648	12,098	3,023	15,121
1865	24,421	674	25,095	8,719	1,532	10,252
1866	31,457	1,452	32,910	7,395	1,911	9,306
1867	19,940	1,612	21,553	9,772	388	10,160
1868	21,671	3,367	25,038	12,755	2,004	14,760
1869	17,019	4,457	21,477	5,791	2,964	8,755
1870	13,598	4,018	17,616	6,339	2,064	8,403
1871	34,200	2,435	36,636	8,797	3,313	12,111
1872	41,589	5,388	46,977	6,370	5,853	12,224
1873	34,487	2,194	36,681	5,985	9,559	15,545
1874	30,242	2,364	32,607	4,741	5,674	10,415
1875	21,850	4,321	26,172	4,579	5,511	10,091
1876	28,104	17,299	45,403	2,997	8,166	11,163
1877	38,607	7,657	46,265	5,013	7,424	12,438
1878	46,368	13,504	59,873	6,255	10,169	16,424
1879	41,561	19,711	61,272	1,589	11,880	13,470
1880	72,400	21,100	93,501	2,139	18,402	20,542
1881	44,164	29,623	73,787	4,807	17,844	22,651
1882	31,394	16,911	48,306	3,633	18,930	22,564
1883	47,738	22,579	70,317	4,938	26,302	31,241
1884	27,360	24,136	51,497	5,444	27,636	33,081
1885	29,382	28,590	57,972	1,571	29,604	31,175
1886	40,956	13,692	54,653	3,219	27,240	30,460
1887	38,710	9,851	48,562	10,215	24,357	34,572
1888	47,759	19,882	67,642	13,764	24,385	38,149
1889	63,200	18,971	82.172	24,948	23,677	48,626
1890	57,255	31,424	88,679	18,522	50,382	68,904
1891	40,069	25,282	65,352	17,832	48,518	66,351
1892	43,920	19,900	63,820	19,127	44,567	63,695
1893	62,967	15,055	78,022	22,563	41,425	63,988
1894	37,148	16,171	53,319	13,913	32,719	46,633
1895	47,857	10,384	58,242	17,674	46,472	64,147
1896	74,379	12,060	86,439	23,798	55,856	79,655

[1] See note 1.

TABLE IV.

ALL-RAIL THROUGH BUSINESS (THROUGH CHICAGO).[1]

(,000 omitted.)

Year	Flour (barrels)	Wheat (bushels)	Corn (bushels)	Oats (bushels)
1877[2]	1,891	1,165	4,814	4,476
1878	2,126	6,196	6,324	5,902
1879	2,379	3,948	14,108	6,810
1880	2,041	1,695	13,057	9,856
1881	3,858	3,040	16,928	10,410
1882	3,129	2,291	9,545	9,745
1883	3,059	3,045	15,031	19,348
1884	3,548	5,444	20,718	23,013
1885	4,033	5,119	24,489	21,172
1886	2,754	2,064	12,566	19,845
1887	5,662	6,895	11,292	23,718
1888	3,772	6,506	27,681	27,805
1889	2,104	2,353	18,767	15,574
1890	2,637	2,393	23,622	36,358
1891	2,694	3,285	16,485	27,287
1892	1,723	4,837	14,610	28,805
1893	2,197	2,555	13,392	26,927
1894	1,860	697	11,297	20,436
1895	922	1,443	6,906	30,648
1896	778	3,539	8,254	40,334

[1] This statement shows the amount of flour and grain received at Chicago over six western railways and delivered to connecting lines without passing through a Chicago elevator. Through shipments originating in Milwaukee are included.—*Report of Chicago Board of Trade.* This table has been compiled from the Reports of the Chicago Board of Trade.

[2] The statement for 1877 shows the amount of flour and grain received at Chicago over western railways and delivered to connecting lines without the intervention of a Chicago consignee.— *Report of Chicago Board of Trade*, 1877, p. 88.

TABLE V—PART 1.

RECEIPTS OF FLOUR AND WHEAT AT ERIE AND BUFFALO BY LAKE, AND RECEIPTS AT THE LEADING EIGHT ATLANTIC PORTS.

(,000 omitted.)

Year	Flour (bbls.)			Leading eight Atlantic ports	Wheat (bu.)			Leading eight Atlantic ports
	Erie[1]	Buffalo[2]	Total		Erie[1]	Buffalo[2]	Total	
1868	117	1,502	1,620	7,444	424	12,555	12,979	20,764
1869	156	1,598	1,754	8,427	672	19,228	19,901	38,633
1870	229	1,470	1,699	8,897	770	20,556	21,326	36,603
1871	167	1,278	1,445	8,618	731	22,606	23,338	43,527
1872	178	762	941	8,193	937	14,304	15,242	28,186
1873	216	1,259	1,475	9,260	2,511	30,618	33,130	52,614
1874	295	1,693	1,989	10,057	3,598	29,778	33,376	62,751
1875	320	1,810	2,131	9,411	3,132	32,967	36,099	54,457
1876	185	807	992	9,120	1,822	19,324	21,147	42,881
1877[3]	85	693	778	8,334	2,507	23,284	25,791	46,828
1878[3]	309	911	1,221	9,604	3,458	35,419	38,877	110,775
1879[3]	368	897	1,265	11,291	3,244	37,788	41,032	144,264
1880[3]	594	1,317	1,912	10,323	3,936	40,510	44,446	135,776
1881[3]	492	1,051	1,543	10,558	2,029	18,495	20,524	85,843
1882[3]	870	1,199	2,069	12,414	1,630	26,050	27,680	81,837
1883[3]	810	2,071	2,882	13,429	649	24,105	24,754	58,836
1884	557	2,615	3,172	13,037	2,221	32,469	34,691	67,997
1885	568	2,903	3,471	13,352	514	27,130	27,645	46,076
1886	371	4,582	4,953	13,591	1,144	41,430	42,574	71,666
1887	919	4,001	4,920	15,692	1,500	48,111	49,611	83,177
1888	988	5,244	6,233	14,398	317	27,548	27,865	35,809
1889	1,655	5,480	7,136	13,611	1,125	26,051	27,177	30,015
1890	1,655[4]	6,245	7,901	15,290	144	24,868	25,033	29,072
1891	990	7,093	8,083	17,040	6,803	76,945	83,748	102,489
1892	2,001	9,746	11,748	20,554	7,841	78,243	86,085	116,145
1893	1,704	10,562	12,266	21,378	3,334	68,243	71,578	86,052
1894	2,192	11,488	13,681	20,795	2,255	50,194	52,449	61,725
1895	1,918	8,971	10,889	19,271	1,777	47,256	49,033	49,205
1896	1,907	10,384	12,291	20,059	5,643	54,411	60,054	65,076

[1] The receipts at Erie are those given in the *Annual Reports of the New York Produce Exchange.*

[2] The receipts at Buffalo are those given in "A Sketch of the Commerce, Industries and Resources of Buffalo, 1883," by William Thurstone, Secretary of the Buffalo Merchants' Exchange, in the *Annual Reports of the New York Produce Exchange*, and in the *Annual Reports of the Buffalo Merchants' Exchange.*

[3] Canadian receipts through the customhouse not included in 1877, 1878, 1879, 1880, 1881, 1882, and 1883 in the statements of Buffalo receipts.

[4] No separate record kept; estimated same as in 1889.

TABLE V—PART 2.

RECEIPTS OF CORN AND OATS AT ERIE AND BUFFALO BY LAKE, AND RECEIPTS AT THE LEADING EIGHT ATLANTIC PORTS.

(,000 omitted.)

Year	Corn (bu.)			Leading eight Atlantic ports	Oats (bu.)			Leading eight Atlantic ports
	Erie [1]	Buffalo [2]	Total		Erie [1]	Buffalo [2]	Total	
1868	517	16,804	17,321	30,800	314	11,492	11,806	16,755
1869	637	11,549	12,186	20,315	130	5,459	5,589	15,259
1870	554	9,410	9,964	18,655	521	6,846	7,367	15,486
1871	301	26,110	26,412	46,417	42	9,006	9,048	21,015
1872	621	34,643	35,264	71,488	947	6,050	6,997	22,254
1873	1,344	28,550	29,895	49,322	351	5,972	6,323	22,270
1874	1,500	24,974	26,474	51,749	594	5,396	5,991	20,333
1875	859	22,593	23,452	46,929	187	8,494	8,682	19,070
1876	2,941	20,939	23,881	84,713	305	2,397	2,703	23,705
1877 [3]	3,022	33,362	36,385	82,716	32	4,279	4,301	19,243
1878 [3]	3,195	35,133	38,329	97,306	137	5,122	5,260	23,842
1879 [3]	2,119	32,990	35,110	94,680	279	1,104	1,384	20,786
1880 [3]	7,070	62,214	69,284	115,410	5	649	654	23,714
1881 [3]	4,667	34,434	39,102	84,983	511	3,565	4,076	24,738
1882 [3]	2,578	21,664	24,243	28,402	547	1,650	2,197	25,464
1883 [3]	3,140	34,975	38,115	62,764	275	3,226	3,502	30,040
1884	1,263	18,538	19,801	39,555	19	3,174	3,194	31,525
1885	1,647	21,028	22,675	77,440	5	767	772	40,412
1886	1,479	29,155	30,634	67,585	...	1,014	1,014	35,917
1887	354	30,199	30,554	43,614	...	4,656	4,656	35,449
1888	1,636	36,422	38,058	47,799	68	7,897	7,965	40,052
1889	3,522	47,127	50,649	83,149	551	14,309	14,861	38,415
1890	7,225	44,136	51,362	92,444	5	13,860	13,865	52,310
1891	2,231	29,616	31,847	50,949	183	12,454	12,637	45,563
1892	5,595	32,377	37,973	83,838	...	16,500	16,500	56,453
1893	8,009	40,539	48,549	59,802	361	20,700	21,061	52,495
1894	2,651	29,078	31,730	53,546	5	15,560	15,565	44,940
1895	2,759	37,579	40,339	66,933	50	22,231	22,281	45,109
1896	6,843	47,811	54,654	113,456	384	40,107	40,492	78,919

[1] The receipts at Erie are those given in the *Annual Reports of the New York Produce Exchange.*

[2] The receipts at Buffalo are those given in "A Sketch of the Commerce, Industries and Resources of Buffalo, 1883," by William Thurstone, Secretary of the Buffalo Merchants' Exchange in the *Annual Reports of the New York Produce Exchange* and in the *Annual Reports of the Buffalo Merchants' Exchange.*

[3] Canadian receipts through customhouse not included in 1877, 1878, 1879, 1880, 1881, 1882 and 1883 in the statements of Buffalo receipts.

TABLE VI — PART 1.

EXPORTS OF FLOUR AND WHEAT FROM NEW ORLEANS AND GALVESTON.[1]

(,000 omitted.)

Year	Flour (bbls.)			Wheat (bu.)		
	New Orleans	Galveston	Total	New Orleans	Galveston	Total
1880	52	0	52	3,923	0	3,923
1881	64	2	66	7,671	0	7,671
1882	28	0	28	1,543	0	1,543
1883	84	0	84	7,089	3	7,092
1884	33	0	33	648	27	675
1885	25	0	25	1,590	2	1,592
1886	..	..	..	....	....	....
1887	54	4	58	4,346	0	4,346
1888	43	0	43	1,566	0	1,566
1889	32	0	32	961	0	961
1890	44	19	63	1,523	....	1,523
1891	52	12	64	10,336	587	10,923
1892	226	21	247	14,207	378	14,585
1893	118	51	169	12,897	1,311	13,208
1894	133	59	192	2,926	135	3,061
1895	91	53	144	836	....	836
1896	268	58	326	3,853	3,439	7,292

[1] For 1880 to 1890 the figures were obtained from *Commerce and Navigation of United States* and for 1889 to 1896 from the *Annual Reports of the New York Produce Exchange*. The exports were taken instead of the receipts because the former alone could be competitive traffic.

TABLE VI — PART 2.

EXPORTS OF CORN AND OATS FROM NEW ORLEANS AND GALVESTON.

Year	Corn (bu.)			Oats (bu.)		
	New Orleans	Galveston	Total	New Orleans	Galveston	Total
1880	8,039	0	8,039	4	0	4
1881	8,900	0	8,900	2	0	2
1882	1,740	0	1,740	3	0	3
1883	6,378	3	6,381	8	0	8
1884	6,052	0	6,052	3	0	3
1885	6,645	0	0,645	4	0	4
1886	....	....	....	..	..	0
1887	7,506	0	7,506	2	5	7
1888	4,950	0	4,950	1	0	1
1889	11,813	0	11,813	0	0	0
1890	12,028	36	12,064	26	1	27
1891	1,912	13	1,925	2	..	2
1892	7,379	145	7,524	9	..	9
1893	6,506	98	6,604	123	13	136
1894	5,441	5	5,446	13	18	31
1895	8,757	1,233	8,990	24	..	24
1896	25,293	6,222	31,515	262	..	262